THE

GEORGE WASHINGTON UNIVERSITY

CATALOGUE

THE SUMMER SESSIONS

1956

THE

GEORGE WASHINGTON UNIVERSITY

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THE SUMMER SESSIONS

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CALENDAR OF THE 1956 SUMMER SESSIONS

Date	Day	Occasion
June 18	Monday	Registration for the eight-week term*
June 19	Tuesday	Classes begin
July 4	Wednesday	Independence Day. Holiday
Aug. 10	Friday	Eight-week term ends
		Last day for receiving theses for the Master's degrees and for the professional degrees in Engineering to be conferred in November
Sept. 7	Friday	Last day for receiving dissertations of candidates for the degrees of Doctor of Philosophy and Doctor of Education to be conferred in November

The Law School

June 8	Friday	Registration for both sessions
June 11	Monday	First session classes begin
July 4	Wednesday	Independence Day. Holiday
July 24	Tuesday	End of first session
July 25	Wednesday	Special registration for students attending second session only
July 26	Thursday	Second session classes begin
September 3	Monday	Labor Day. Holiday
September 8	Saturday	End of second session

The School of Education—Special Sessions

June 11	Monday	Registration and first day of classes of the pre-session and twelve-week evening session
June 29	Friday	Pre-session ends
July 2	Monday	Registration and first day of classes of the special six-week session
July 4	Wednesday	Independence Day. Holiday
July 20	Friday	Twelve-week evening session ends
Aug. 10	Friday	Special six-week session ends
Aug. 13	Monday	Registration and first day of classes of the post-session
Aug. 31	Friday	Post-session ends

Registration for the academic year 1956–57 will be held September 20 and 21.

* For all schools and colleges offering courses in the Summer Sessions except the Law School and the School of Education.

THE UNIVERSITY

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The Board of Trustees of the University is composed of the President of the University ex officio and the following persons by election:

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John Francis Latimer, Ph.D., *Assistant Dean of the College of General Studies; University Marshal*
John Gage Allee, Jr., Ph.D., *Assistant Dean of the Division of University Students*

THE UNIVERSITY

History and Organization

The idea of a university in the Capital of the Nation was sponsored by George Washington, who during his public life urged the establishment of such an institution and who in his will left fifty shares of stock in the Potomac (Canal) Company for the endowment of a university to be established in the District of Columbia "to which the youth of fortune and talents from all parts thereof might be sent for the completion of their Education in all the branches of polite literature;—in arts and Sciences,—in acquiring knowledge in the principles of Politics & good Government".

Columbian College in the District of Columbia was chartered by an act of Congress of February 9, 1821. In 1873 the name was changed to "Columbian University" and in 1904 to "The George Washington University".

The George Washington University includes fourteen colleges, schools, and divisions, as follows:

The Junior College offers the work of the first two years of the four-year college program in the liberal arts and sciences; two years of pre-professional work; and two-year terminal courses. Each of these curricula leads to the degree of Associate in Arts.

Columbian College offers the work of the junior and senior years of the four-year college program in the liberal arts and sciences leading to the degrees of Bachelor of Arts and Bachelor of Science. It also offers the studies leading to the degrees of Master of Arts and Master of Science in the fields of the liberal arts and sciences.

The Graduate Council offers a program of advanced study and research leading to the degree of Doctor of Philosophy.

The School of Medicine offers work leading to the degree of Doctor of Medicine.

The Law School offers curricula leading to the degrees of Bachelor of Laws, Juris Doctor, Master of Laws, Master of Comparative Law (for foreign students wishing (1) to return to their own countries or (2) to remain in this country for the practice of law), and Doctor of Juridical Science.

The School of Engineering offers courses leading to the degrees of Bachelor of Civil Engineering, Bachelor of Electrical Engineering, Bachelor of Mechanical Engineering, Bachelor of Science in Engineering, Master of Engineering Administration, and Master of Science in Engineering. It also directs work leading to the professional degrees in the fields of civil, electrical, and mechanical engineering.

The School of Pharmacy offers courses leading to the degrees of Bachelor of Science in Pharmacy and Master of Science in Pharmacy.

The School of Education offers undergraduate programs leading to the degrees of Bachelor of Arts in Education, Bachelor of Science in Home Economics, and Bachelor of Science in Physical Education, and graduate studies leading to the degrees of Master of Arts in Education and Doctor of Education.

The School of Government offers undergraduate programs of study in Foreign Affairs, Accounting, Business Administration, and Statistics, leading to the degree of Bachelor of Arts in Government. Graduate work is offered leading to the following degrees: Master of Arts in Government in the fields of Foreign Affairs, Economic Policy, Accounting, Business and Economic Statistics, and Counseling; Master of Arts in Public Administration in the fields of General Administration and Governmental Fiscal Administration; Master of Arts in Personnel Administration; Master of Business Administration; and Doctor of Business Administration.

The College of General Studies includes the following divisions: the Off-Campus Division, the Campus Division, and the Division of Community Services. The college is designed for adults, and sponsors a program of credit and non-credit courses throughout the year.

The Division of University Students makes available courses for mature students not candidates for degrees in this University.

The Division of Special Students makes available courses for students in the process of qualifying for degree candidacy.

The Division of Air Science offers a program of Air Force ROTC training which is integrated with the curricula of the colleges and schools of the University and leads to appointment as a commissioned officer in the United States Air Force Reserve.

The Summer Sessions.

Academic Status

The George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools. This is important to students who wish to transfer credits from one institution to another.

The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board.

The Law School is a charter member of the Association of American Law Schools and is approved by the Section of Legal Education and Admissions to the Bar of the American Bar Association. The School Medicine is a member of the Association of American Medical Col-

leges, and is one of the medical colleges which have been continuously approved by the American Medical Association. The School of Pharmacy is accredited by the American Council on Pharmaceutical Education as a Class "A" school. It is a member of the American Association of Colleges of Pharmacy. The School of Engineering is on the accredited list of the Engineers' Council for Professional Development. The School of Education is a charter member of the American Association of Colleges for Teacher Education.

Location

The George Washington University is in downtown Washington, four blocks west of the White House and east of the Potomac River with its extensive parkway. Readily accessible to the University are many of the departments of the Government, including the Department of State, the Department of the Treasury, the Department of Justice, the Department of the Army, the Department of the Navy, the Department of the Interior, the Department of Agriculture, the Department of Commerce, and the Department of Labor; as well as the National Archives, the Capitol, the Library of Congress, the National Academy of Sciences, the Pan American Union, the National Gallery of Art, and the Corcoran Gallery of Art.

Educational Facilities

Buildings, grounds, and equipment of the University are valued at approximately $19,000,000. The buildings of the colleges, schools, and divisions offering Summer Sessions work are in the vicinity of Twenty-first and G Streets, NW.

The University Library.—The University Library contains 290,000 volumes, and with the exception of the law and medical collections is housed in the Library Building.

Regulations governing the use of the library, the circulation of books, and the use of reserve books and periodicals are available at the service desks of the Library.

Other Library Facilities in Washington

The student has access also to the Library of Congress, the Public Library of the District of Columbia and its branches, the Library of the Pan American Union, the Library of the Bureau of Railway Economics, the Library of the United States Department of Agriculture, the Library of the United States Office of Education, the Armed Forces Medical Library, the Library of the Smithsonian Institution, and many other great special collections of the government departments.

Research Facilities of Washington

The arrangement of the summer schedule of classes permits the full-time student to avail himself of the opportunity to study, at first hand, the working of the Federal Government and so to form a background for intelligent and useful citizenship.

In the departmental libraries of the Federal Government are a multitude of reports made by eminent specialists in all fields of science on the results of study and research in the bureaus, experimental stations, laboratories, museums, and observatories of the Nation.

In addition to the governmental collection the student has access to the research facilities of such scientific and educational groups, whose headquarters are situated in Washington, as the Carnegie Institution, the American Council on Education, the American Council of Learned Societies, the National Academy of Sciences, the National Research Council, the National Education Association, and the National Geographic Society.

THE SUMMER SESSIONS

1956

STAFF OF INSTRUCTION IN THE SUMMER SESSIONS

John Gage Allee, Jr. Ph.D., *Assistant Professor of English*
Antonio Alonso, A.M., *Associate Professor of Spanish*
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Wilbur Earle Benson, A.B., M.B.A., *Instructor in Accounting*
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Charles William Cole, Ph.D., *Professor of American Literature*
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Walter David Fackler, A.B., *Assistant Professor of Economics*
Bernard Hyman Fox, Ph.D., *Assistant Professor of Psychology*
James Harold Fox, A.M., Ed.D., *Professor of Education*
William Thomas Fryer, A.B., LL.B., J.D., *Professor of Law*

Combie James Dickinson Garrett, A.B., LL.B., *Associate Professor of Law*
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Ira Bowers Hansen, Ph.D., *Professor of Zoology*
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Chester Hayden McCall, Jr., A.M., *Instructor in Statistics*
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Leroy Sorenson Merrifield, A.B., LL.B., M.P.A., *Associate Profess of Law*
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James Willis Robb, A.M., *Assistant Professor of Romance Languages*
Gretchen Louisa Rogers, Ph.D., *Associate Professor of German*
Blake Smith Root, A.M., Ed.D., *Professor of Education*
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Mildred Hollander Shott, A.M., *Associate Professor of Secretarial Studies*
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Edwin Lockwood Stevens, A.M., *Associate Professor of Speech*
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Herman Lynn Womack, Ph.D., *Associate in Philosophy*
Samuel Nathaniel Wrenn, Ph.D., *Professor of Chemistry*
Helen Zhemchuzhnaya Yakobson, B.S., *Assistant Professor of Russian*

THE SUMMER SESSIONS

The work of the Summer Sessions has been planned to meet the needs of full- and part-time students.

During the summer of 1956, courses are offered in the Junior College, Columbian College (the senior college), the Law School, the School of Pharmacy, the School of Education, the School of Government, and the Division of Air Science.

ADMISSION

An applicant for admission must obtain from the Office of the Director of Admissions an application blank which he must fill out completely and return with the application fee of $3. A recent photograph, with signature, of the applicant must be attached to the blank.

Entrance Requirements

The Student Seeking a Degree

An applicant from a secondary school must send the high school record form furnished by the University to his high school principal, with the request that the principal fill out the form and mail it direct to the Office of the Director of Admissions.

An applicant who has previously attended an institution of higher learning should request the registrar of that institution to mail direct to the Office of the Director of Admissions a transcript of his record. If he has attended more than one such institution he must request the registrar of each institution to send to the Office of the Director of Admissions a transcript of his record, *even though credits were not earned,* together with an honorable dismissal.

Entrance requirements are stated in this bulletin under the various colleges, schools, and divisions.

The Student Not Seeking a Degree

Students 21 years of age or over who are not interested in working for a degree in this University may be considered for admission to the Division of University Students to take courses for which they have adequate preparation, as evidenced by previous scholastic records.

In special instances, with the permission of the instructor, a person who has been admitted to the University may be registered as an auditor in a class without being required to take active part in the exercises of

to pass examinations, but no academic credit will be allowed for such attendance. Students in good standing and matriculated for degrees in other institutions who wish to take certain courses in this University will be admitted to the Division of University Students for the summer only, to the extent that the facilities permit. In such cases transcripts of record are not required.

REGISTRATION

Before a student may register he must have satisfied the Office of Admissions that he is qualified to enter the University.

A student previously matriculated in the University but not in attendance during the term preceding this registration must file an application for readmission in advance of registration.

Registration for both sessions of the Law School summer term will be held June 8. *Students planning to take the New York Bar examination must register at this time for both sessions and attend both of them.* Students wishing to attend only one session may register on June 8 for the first or second session, or register on July 25 for the second session. Tuition fees will be payable by the session.

For registration, students should report to the Office of the Registrar,* Building C, 2029 G Street NW., between 9:00 A.M. and 7:00 P.M., on the dates stated in the Calendar.

Changes in Program of Study

Changes in programs of study may be made only with the permission of the adviser or major professor and the dean or director of the college, school, or division concerned.

FEES AND FINANCIAL REGULATIONS

By authorization of the Board of Trustees, the following fees have been adopted:

Tuition Fees

For each semester hour for which the student registers except work in the Law School, work toward the Master's degrees in Engineering, and work taken by a candidate for a Doctor's degree‡	$ 16.00
For each semester hour for which the student registers in the Law School	18.00

* Registration for the Law School is conducted in Stockton Hall, 720 Twentieth Street, NW.

‡ Payment of tuition for the Master's thesis entitles the candidate, during the academic year of registration, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished, an additional successive academic year may be granted without further tuition payment. If the preparation of the thesis extends beyond the second academic year, it must be registered for again, and tuition paid on the same basis as for a repeated course.

For the degree of Doctor of Philosophy, Doctor of Education, or Doctor of Business Administration:
For work* leading to and including the Council Fellowship or General examination‡ 480.00
For work leading to and including the final examination* 480.00
For the degree of Doctor of Juridical Science:
For work leading to and including the final examination‡ 480.00
For the degree of Master of Engineering Administration:
For work leading to and including the Comprehensive Problem and the Comprehensive Examination 550.00
For the degree of Master of Science in Engineering:
For work leading to and including the Comprehensive Examination 600.00

ADDITIONAL COURSE FEES

In certain courses additional fees such as laboratory and material fees are charged as indicated in the course descriptions. These fees are due with the tuition fee for the course. Breakage of apparatus is charged against the individual student. When breakage is in excess of the normal amount provided for in the laboratory fee, the individual student will be required to pay such additional charges as are determined by the department concerned.

GRADUATION FEES

Wherein the degree of Associate in Arts is granted..... 10.00
Wherein the degree of Associate in Arts degree is granted 20.00
Wherein a degree other than the Associate in Arts degree is granted 20.00
Wherein an Advanced Professional Certificate in Education is granted 5.00

FEE FOR BINDING MASTER'S THESIS..... 75.00

FEE FOR PRINTING SUMMARY OF DOCTORAL DISSERTATION..... 3.00

SPECIAL FEES

Application fee, charged each applicant for admission, non-refundable 3.00
Scholastic-aptitude test fee (when required for admission)..... 5.00
Late registration fee, charged each student who fails to register within the designated period 5.00
Withdrawal fee, charged each student who preregisters and withdraws prior to the regular registration..... 1.00
Service fee, charged each student for late payment of tuition (see "Payment of Fees")..... 5.00
Reinstatement fee, charged each student who is reinstated after suspension for delinquency in fees..... 5.00
For each examination to qualify for advanced standing and for each special examination 2.00
Laboratory checkout fee, charged each student in chemistry and pharmacy courses who fails to check out of the laboratory by the time set by the instructor..... 1.00
Transcript fee, charged for each transcript of record after the first...

Registration in the University entitles each student to the following University privileges: (1) the issuance of one certified transcript of record, if and when desired; (2) the services of the Placement Office; (3) the use of the University library facilities, except as otherwise desig

* This fee does not cover the cost of tuition for elementary courses (numbered 1 to 100).
‡ When a limited schedule is carried which extends the time of either the preparation period or the examination period to more than one year, the proportionate part of the charge may be fixed by the Treasurer.

nated; (4) medical attention and hospital services described below. These privileges, with the exception of the issuance of transcripts, cease when the student withdraws or is dismissed from the University.

Medical and Hospital Services.—These services include: (1) three visits by the University physician or surgeon, office or residence (District of Columbia) in any one illness, exclusive of a specialist, surgical operation, laboratory, or X-ray examinations; (2) hospitalization, including board and nursing in the University Hospital for not more than one week during any twelve-month period—the necessity to be determined by the Director of Health Administration. The duration of hospitalization period (maximum, one week) is also to be determined by the Director of Health Administration.

The student is allowed, if he so desires, to engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

This medical benefit does not apply to illness or disability incurred previous to the University term or prior to payment of tuition fees.

Payment of Fees

All fees are payable at the Office of the Cashier, 725 Twenty-first Street NW. No student is permitted to complete registration or to attend classes until all fees are paid. Fees for each session are due in advance at the time of registration.

An auditor pays all fees chargeable to the student registered for credit except the late-registration fee.

Withdrawals and Refunds

Registrations are for the session, and no refunds or rebates are allowed, unless the registration is in advance and the course is dropped before the day of registration for the session involved.

A student who preregisters and withdraws prior to the date of regular registration will be charged a withdrawal fee of $5.

In no case will any part of the initial payment of tuition be refunded because of nonattendance upon classes.

Payments apply only to the session for which registration charges are incurred, and in no case will these payments be credited to another session or term.

Any student in chemistry who fails to check out of the laboratory on or before the date set by the instructor, unless excused by the instructor, will be charged a laboratory check-out fee of $2. A student dropping a course before the end of the session must check out of the laboratory at the next scheduled laboratory period.

No permission to withdraw and no certificate for work done will be given a student who has not a clear financial record.

UNIVERSITY REGULATIONS

Students in the Summer Sessions are subject to, and are expected to familiarize themselves with, the University regulations as stated in the general catalogue.

Academic Credit.—The Summer Sessions are an integral part of the University. Academic credit for completed work will be given toward the appropriate degrees in the various colleges and schools of the University in accordance with their separate regulations and requirements.

Residence.—Summer Sessions work may be counted in residence but the candidate for a degree must satisfy the residence requirements of the school or college concerned as stated in the general catalogue.

Amount of Work.—No full-time student may take more than nine semester hours of work during the eight-week session; no employed student, more than six hours.

In the Law School the maximum amount of work that may be taken in both sessions by a full-time student is twelve semester hours; by an employed student, eight semester hours.

The right is reserved to drop any student whenever, in the interest of the student or the University, the Faculty deems it advisable to do so.

The University is not responsible for the loss of personal property belonging to a student.

The University and its various colleges, schools, and divisions reserve the right to modify or change the requirements, rules, and fees of the University. Such regulations shall go into force whenever the proper authorities may determine and shall apply to every student of the University.

Detailed information concerning curricula; courses offered; admission scholarship requirements of the individual colleges, schools, and divisions; and requirements for degrees may be obtained from the general catalogue, which is available on request at the Office of the Director of Admissions.

VETERANS EDUCATION

The George Washington University is approved to provide training for veterans under the provisions of Public Laws 346, 16, 550, and 894. The Office of Veterans Education, 2029 H Street NW., Building Q, operates as a service bureau for veterans interested in studying at the University and acts in a liaison capacity between the University and the Veterans Administration. Here information may be obtained con-

cerning the educational program of the University and the procedure for securing educational benefits under the GI bills. Veterans residing in the Washington area will often find it to their advantage to seek advice at the Office of Veterans Education before applying to the Veterans Administration for a Certificate.

Public Law 346
(World War II GI Bill)

The educational benefits provided for veterans under Public Law 346 terminate July 25, 1956, except as described below.

The Armed Forces Voluntary Recruitment Act of 1945 provided that persons enlisting or reenlisting in the armed forces between October 6, 1945 and October 5, 1946 may count the entire period of such enlistment or reenlistment as war service for purposes of GI Bill benefits. Such enlistees, therefore, may substitute the date that their period of enlistment ended in computing their benefits where that date is later than July 25, 1947.

It is suggested that a veteran having any question regarding his eligibility consult the Office of Veterans Education or the Veterans Administration, Veterans Benefits Office, Munitions Building, Constitution Avenue and Twentieth Street NW., Washington 25, D. C.

Public Law 550
(Korean GI Bill)

In order to be eligible for the benefits under this GI Bill, a veteran must have been in service since June 27, 1950, and must no longer be on active duty. For further information concerning these benefits, it is suggested that he consult the Veterans Administration, Veterans Benefits Office, Munitions Building, Constitution Avenue and Twentieth Street NW., Washington 25, D.C. At least thirty days prior to registration the veteran desiring to attend under this GI Bill should apply to the Veterans Administration for a Certificate for Education and Training, which should be presented at the time of registration. A photostatic copy of separation papers must accompany this original application. Veterans who have attended another institution under any GI bills must obtain a Supplemental Certificate from the Veterans Administration for presentation to this University at registration.

Public Laws 16 and 894
(Vocational Rehabilitation)

Disabled veterans desiring vocational rehabilitation under either GI Bill should apply to the Veterans Administration, Veterans Benefits

Office, Munitions Building, Constitution Avenue and Twentieth Street NW., Washington 25, D.C., for approval of their training objective at least sixty days prior to registration.

STUDENT LIFE

Social and Recreational Program of the University

The summer social and recreational program includes regularly scheduled social, square, and folk dances on Lisner Terrace. For those who would like instruction and practice in dance, teaching sessions are provided. Get-acquainted teas and a carnival are also included in the program.

During the summer notices of the many recreational and social opportunities offered in the Capital will be posted on a bulletin board in the Student Union.

Living Accommodations

Women Students.—The Hattie M. Strong Residence Hall provides single rooms at $35 a month and double rooms at $30 a month a person. Meals are served at the Student Union. Admission to the University does not include dormitory reservation. A separate application for a room should be made well in advance. Forms for application, together with detailed information, may be obtained from the Director of Activities for Women, Woodhull House, 2033 G Street NW.

Girls under the age of twenty-one who are enrolled for six or more credit hours of academic work in the University and who are not living with their parents or relatives may live outside the dormitory only with the permission and approval of the Director of Activities for Women, upon receipt of written requests from parents. In no case will permission be granted for such girls to be domiciled outside the dormitory, except with persons approved by the Director of Activities for Women.

Men Students.—Welling Hall provides double room facilities for 102 students. Rooms rent for $24 a month a person. Meals are served at the Student Union. Application forms for room reservation may be obtained from the Director of Activities for Men, Building Q, 2029 H Street NW.

Information concerning private rooming and boarding facilities near the University, for women students twenty-one years of age or older and for men students, may be obtained at the Housing Office. The reservation of rooms in private houses must be made by students.

THE COLLEGES, SCHOOLS, AND DIVISIONS

THE COLLEGES, SCHOOLS, AND DIVISIONS

Information concerning specific requirements for degrees is omitted from this bulletin. For such information, the student is referred to the general catalogue.

THE JUNIOR COLLEGE

The Junior College includes the first two years of college work. Its curricula are intended to continue the studies of a general cultural nature begun in secondary school, and to lay a foundation for the more specialized work which is to follow.

The Junior College also provides the preprofessional work required for admission to the schools of Pharmacy, Education, and Government, and the first two years of the preprofessional work required for admission to the schools of Medicine and Law.

In addition it provides two-year terminal curricula in Accounting, Home Economics, Pre-Medical-Technology, Science, and Secretarial Studies.

The Degree of Associate in Arts

The Junior College offers work leading to the degree of Associate in Arts.

Entrance Requirements

An acceptable certificate of graduation from an accredited secondary school is required. The acceptability of the certificate depends upon the student's character and the quality of his work.

COLUMBIAN COLLEGE

Columbian College, the senior college of liberal arts and sciences, comprises the work of the junior and senior years and the Master of Arts and Master of Science disciplines.

The Degrees

Columbian College offers work leading to the following degrees: Bachelor of Arts, Bachelor of Science, Master of Arts, and Master of Science. In cooperation with the School of Medicine, Columbian College offers work leading to the combined degrees of Bachelor of Arts and Doctor of Medicine.

Undergraduate Majors

Curricula leading to the degree of Bachelor of Arts are available in the following major fields:

American Thought and Civilization
Art:
  Appreciation
  Drawing and Painting
Biology
Botany
Chemistry
Economics
English Literature
French Literature
Geography
Germanic Languages and Literatures
History
Journalism:
  News-Editorial
  Public Relations
Latin American Civilization
Mathematics
Philosophy
Physics
Political Science
Psychology
Religion
Sociology
Spanish American Literature
Spanish Literature
Speech
Statistics
Zoology

Curricula leading to the degree of Bachelor of Science are available in the following major fields:

Biology
Botany
Chemistry
Mathematics
Physics
Statistics
Zoology

Graduate Fields

Graduate work leading to the degree of Master of Arts or Master of Science is offered in the following fields:

American Literary and Cultural History
Anatomy
Bacteriology
Biochemistry
Biology
Botany
Chemistry
Chemotherapy
Economics
English and American Literature
English Literature
French Literature
Geography
History
Latin American Civilization
Mathematics
Pharmacology
Philosophy
Physics
Physiology
Political Science
Psychology
Sociology
Spanish American Literature
Spanish Literature
Statistics
Zoology

In addition, programs can be arranged in combined fields subject to the approval of the division or divisions concerned.

Entrance Requirements

For the Bachelor's degrees, the degree of Associate in Arts based on the appropriate curriculum in the Junior College, or the equivalent, is required. Scholarship requirements may be somewhat higher than those for graduation from the Junior College. For the Master's degrees, an approved Bachelor's degree from an accredited institution and a transcript of studies previously pursued, showing appropriate distribution of courses and a superior quality of work in the major field, are required.

THE GRADUATE COUNCIL

The Graduate Council offers work leading only to the degree of Doctor of Philosophy. Because the basis for work under the Graduate Council is primarily creative research, regular study in specific courses is considered quite incidental and is therefore not emphasized in connection with the curricula of the Summer Sessions. A student wishing to work under the disciplines of the Graduate Council will consult the Chairman of the Graduate Council for information concerning credentials and candidacy.

A pamphlet describing details of the Graduate Council program, together with a current list of fields of research offered by the Council, will be sent upon request by the Office of the Graduate Council.

THE LAW SCHOOL

The Law School offers work leading to the following degrees: Bachelor of Laws, Juris Doctor, Master of Laws, Master of Comparative Law, and Doctor of Juridical Science.

See "Registration," on page 17 for provisions applicable to students who plan to take the New York Bar examination.

Entrance Requirements

For the Degree of Bachelor of Laws.—A Bachelor's degree awarded upon completion of a four-year course in an approved college or university is required. All pre-legal work must be of a satisfactory quality and distribution. No student will be admitted who has been in attendance at another law school and who is ineligible to return to that school in good standing. From the applicants, a selection will be made by the Committee on Admissions.

The Juris Doctor degree is conferred as a recognition of completion with high rank of the full course, including experience in research and legal authorship. A student does not register as a candidate for this degree until his last year in the Law School.

For the Degree of Master of Laws.—A Bachelor of Arts or equivalent degree from an approved college or university and a Bachelor of Laws or equivalent degree from a member school of the Association of American Law Schools are required. Candidates for admission must have attained an average grade on all work done for the Bachelor of Laws degree equivalent to the relative position of a *B* average in the standards of grading at this Law School, except that, in the discretion of the Committee on Graduate Studies, applicants otherwise eligible may be admitted on proof of experience and attainment as an alternative.

For the Degree of Master of Comparative Law.—The following are required: (1) the successful completion of and graduation from a course in arts, philosophy, letters, or sciences, equivalent to graduation from a gymnasium, lycee, or lyceo (junior college); and (2) graduation in law from a recognized foreign university where training was in civil law.

For the Degree of Doctor of Juridical Science.—The following are required: (1) the degree of Juris Doctor from this Law School; or (2) the degree of Bachelor of Arts from an approved college, the degree of Bachelor of Laws or the equivalent, earned with high rank, from a member school of the Association of American Law Schools, and outstanding capacity for scholarly work in the field of law.

Unclassified Students.—A person who is in good standing as a degree candidate in another law school which is a member of the Association of American Law Schools may, at the discretion of the Dean, be admitted as an unclassified student in order to earn credits for transfer to the other law school.

A person who is a member of the bar or a person, not a member of the bar, who is a graduate of a member school of the Association of American Law Schools may, at the discretion of the Dean, be admitted as an unclassified student.

Unclassified students are required to participate in the work of the course and take examinations. Courses taken by unclassified students will not be credited toward degrees at this Law School.

Continuing Legal Education Students.—A simplified admission and registration procedure is provided for members of the bar desiring to register as continuing legal education students to take courses on a non-credit basis. Members of the bar desiring to register as degree candidates or as unclassified students should file the regular application for admission form.

THE SCHOOL OF PHARMACY

The School of Pharmacy offers work leading to the degree of Bachelor of Science in Pharmacy.

Entrance Requirements

An Associate in Arts degree based on the curriculum in Pharmacy in the Junior College, or the equivalent, is required.

THE SCHOOL OF EDUCATION

The School of Education prepares teachers, supervisors, and administrators for educational service and offers opportunities to teachers of experience to extend their education. The schedule of courses is arranged to meet the needs of employed students as well as those able to devote full time to their studies. It offers both graduate and undergraduate work.

The Degrees

The School of Education offers work leading to the following degrees: Bachelor of Arts in Education, Bachelor of Science in Home Economics, Bachelor of Science in Physical Education, Master of Arts in Education, and Doctor of Education.

Entrance Requirements

For the Bachelor's Degrees.—The satisfactory completion of two years of approved college work, or graduation from an approved two-year normal school, or the equivalent, is required.

For the Master's Degree.—A Bachelor's degree from an accredited college, or the equivalent, and the approval of the Committee on Admissions and Advanced Standing are required.

For the Doctor's Degree.—A Master's degree from an accredited college, or the equivalent, and the approval of the Faculty of the School of Education are required.

THE SCHOOL OF GOVERNMENT

The Degrees

The School of Government offers work leading to the following degrees: (1) Bachelor of Arts in Government with a major in Foreign Affairs, Accounting, Business Administration, or Business and Economic Statistics; (2) Master of Arts in Government with a major field in Foreign Affairs, Economic Policy, Accounting, Business and Economic Statistics, Counseling, or Psychometrics; (3) Master of Arts in Public Administration with a major in General Administration or Governmental Fiscal Administration; (4) Master of Arts in Personnel Administration; (5) Master of Business Administration; (6) Doctor of Business Administration.

Entrance Requirements

For the Bachelor's Degree

Bachelor of Arts in Government.—An Associate in Arts degree based on the *Foreign Affairs, Accounting, Business Administration,* or *Statistics* curriculum in the Junior College, or the equivalent, and a quality-point index of 2.00 for the first two years' work are required.

For the Master's Degrees

A Bachelor's degree from an accredited college or university is required. A student from an unaccredited institution may be admitted at the discretion of the Dean's Council, but will be required to take such extra work above the minimum requirements as may be prescribed.

Students admitted to candidacy must have attained a quality-point index of 3.00 (a *B* average) in their undergraduate major. Applicants whose scholastic average is below 3.00 in their major, or who lack prerequisite courses, may be referred to the Division of Special Students to make up the deficiency.

Master of Arts in Government.—The applicants' undergraduate program must have included prerequisite courses, corresponding to undergraduate majors at this University, for the chosen field of graduate study.

Master of Arts in Public Administration.—An undergraduate major in a social science field appropriate to the chosen field of advanced work in public administration is required.

Master of Arts in Personnel Administration.—An undergraduate major in a social science or education, with the appropriate courses in psychology is required.

Master of Business Administration.—An acceptable undergraduate major in Business Administration or the equivalent is required. Applicants who are deficient in such course work may be admitted and will be required to make up deficiencies over and above the normal Master of Business Administration program.

For the Degree of Doctor of Business Administration

A Master's degree in Business Administration or a related field, or the equivalent, and proficiency in Statistics and Accounting to the satisfaction of the Committee on Doctoral Studies are required.

COLLEGE OF GENERAL STUDIES

The College of General Studies offers off-campus credit and non-credit courses in any field in which there is sufficient demand and for which instructional facilities can be made available. These courses will me

at the time and place most convenient for the students enrolled and may begin at any time of the year.

The College also provides degree-granting divisions for mature adults whose background and experience is such that they should be matriculated in a division designed to meet their special needs.

The Division of Community Services provides a program of community educational services such as the George Washington University Reading Clinic and the Government Intern Scholarship Program.

Entrance Requirements

Off-Campus Credit Courses.—A simplified procedure for admission and registration in off-campus courses is conducted at the first meeting of the class. Transcripts of previous academic work are not required. Registration is restricted to those whose qualifications would indicate that they are able to carry the course successfully. Admission to an off-campus course does not constitute admission to degree candidacy in the University.

Non-Credit Courses.—In general, non-credit courses will be open to any individual interested in enrolling. When a non-credit course is organized at the request of some particular agency or group, admission may be restricted to the students recommended by the sponsoring organization. A limit on the size of classes may have to be imposed in order to maintain the quality of instruction.

THE DIVISION OF UNIVERSITY STUDENTS

The Division of University Students makes the work of the University, in its several colleges and schools, accessible to students 21 years of age or over who are not working toward a degree in this University.

Candidates for degrees in other colleges and universities attending the Summer Sessions of the University are registered in the Division of University Students.

Adequate preparation to undertake the desired courses is required.

THE DIVISION OF SPECIAL STUDENTS

This is a non degree-granting division of the University in which the Director of Admissions may authorize the placement of students in the process of making up entrance deficiencies to degree-granting colleges and schools of the University.



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COURSES OF INSTRUCTION

COURSES OF INSTRUCTION

Explanation of Course Numbers

First-group courses.—Courses numbered from 1 to 100, are planned for the student in the freshman or sophomore year. With the approval of the adviser and the dean, they may also be taken by a junior or senior. In certain instances, they may be taken by a graduate student to make up undergraduate deficiencies or as prerequisite to advanced courses, but they may not be credited toward a higher degree.

Second-group courses.—Courses numbered from 101 to 200, are planned for the student in the junior or senior year. They may be credited toward higher degrees only when registration for graduate credit has been approved at the beginning of the course by the dean responsible for the graduate work and by the officer of instruction, and when the completion of additional work has been certified by the officer of instruction.

Third-group courses.—Courses numbered from 201 to 300, are planned primarily for the graduate student. They are open, with the approval of the officer of instruction, to the qualified senior; they are not open to the Junior College student.

In the Law School, first-year courses are numbered from 101 to 200; second-year courses, from 201 to 300; third-year courses, from 301 to 400; and graduate courses, from 401 to 500.

Indication of the Amount of Credit

The number of hours of credit given for the satisfactory completion of a course is in most cases indicated in parentheses after the name of the course.

The University reserves the right to change or withdraw any of the courses of instruction listed.

ACCOUNTING

1 *Introductory Accounting* (3) — Kennedy
Basic principles underlying accounting records used by single proprietorships; preparation of the work sheet and financial statements. 8:10 A.M.

1–2 *Introductory Accounting* (3–3) — Benson
Study of basic principles underlying accounting records used by single proprietorships, partnerships, and corporations; preparation of the work sheet and financial statements; introduction to cost accounting and to valuation and income determination problems. Prerequisite to Accounting 2: Accounting 1 or permission of the Instructor. Accounting 2 begins July 16. 7:10 to 9:00 P.M.

101 *Cost Accounting* (3) — Kurtz
Study of the theory and purposes of industrial cost accounting: treatment of the systems of cost control and determination; and the analysis and interpretation of cost data. Emphasis will be on job order cost accounting. Prerequisite: Accounting 1–2. 9:10 A.M.

111 *Financial Statement Analysis* (3) — Kennedy
Methods and techniques of preparing, analyzing, and interpreting financial statements for the guidance of operating executives, directors, stockholders, and creditors; determination and interpretation of trends and ratios. Prerequisite: Accounting 1–2. MTWTh 7:00 to 8:05 A.M.

132 *Accounting Theory* (3) — Kurtz
Study of the development of basic accounting principles and concepts with special reference to the current thought expressed by the American Institute of Accountants and the American Accounting Association. Prerequisite: Accounting 1–2. TTh 7:10 to 9:25 P.M.

171 *Auditing* (3) — Kurtz
Study of the duties and responsibilities of auditors, principles and procedures of making audits, the techniques of verifying each financial statement item, and the preparation of audit working papers and reports. Prerequisite: Accounting 121–22. MW 7:10 to 9:25 P.M.

193 *Business Budgeting* (3) — Benson
Study of the principles, preparation, and administration of a business budget, with emphasis on the importance of the budget to management. Prerequisite: Accounting 1–2. 6:10 P.M.

212 *Managerial Accounting* (3) — Kennedy
Study of the accounting system with special reference to the use of financial and operating records as a tool of management; emphasis is placed on managerial internal accounting control, accounting reports, and the use of budgets and cost data in directing and controlling the business. Prerequisite: nine hours of accounting or the permission of the instructor. TTh 7:10 to 9:25 P.M.

ART

71 *Introduction to the Arts in America* (3) — Kline
Painting, architecture, and sculpture in America during the Colonial and Republican periods. 5:10 P.M.

72 *Introduction to the Arts in America* (3) Kline
Painting, architecture, and sculpture in America during the mid-19th and 20th centuries. 6:10 P.M.

BIOLOGY

1–2 *Survey in Biology* (3–3) Bowman, Munson
A review of the plant and animal kingdoms, with emphasis upon the interdependence of living things and their relations with their environments. Introduction to evolution and heredity, public health, and conservation of natural resources. Material fee, $6 for each half. Nine-week term. Biology 1 is not prerequisite to Biology 2. Biology 2 begins July 19 and ends August 20. Lectures, laboratories, and field trips. 1:10 to 5:00 P.M.

212 *Research in Cytology* (arr.) Bowman
Individual problems for advanced students interested in this field. Hours and credits to be arranged.

299–300 *Thesis* (3–3) Bowman

BOTANY

1 *Structure and Functions of the Flowering Plant* (3) Palmer
The typical plant as a working mechanism, with emphasis on the general biological significance of plant physiology. Material fee, $6. Lecture—TThF 10:10 A.M.; Laboratory—MW 10:10 to 12:00 A.M.

2 *Survey of the Plant Kingdom* (3) Palmer
Study of the different kinds of plants, with emphasis on the evolution of the plant kingdom; practice in identifying flowering plants. May be taken concurrently with Botany 1. Material fee, $6. Lecture—MW 12:10 P.M.; F 11:10 A.M.; laboratory—TTh 11:10 A.M. to 1:00 P.M.

295 *Research* (arr.) The Staff
Time, credits, and fees to be arranged.

299–300 *Thesis* (3–3) The Staff

BUSINESS ADMINISTRATION

101 *Business Organization and Combination* (3) Timberlake
Simple and interrelated forms of business enterprise and their control by government. MTWTh 7:55 to 9:00 A.M.

102 *Business Management* (3) Horchow
The management movement, organization of an enterprise, principles of management and their application to various departments of an enterprise. MTWTh 11:10 A.M. to 12:15 P.M.

105 *Personnel Management in Industry* (3) Stonesifer
Organization and work of the personnel department, human relations in business. MW 7:10 to 9:25 P.M.

109 *Office Management* (3) — Horchow
Organization and layout of an office, use of office machines and appliances, planning and execution of work, supervision problems. MTWTh 5:55 to 7:00 P.M.

131 *Business Finance* (3) — Timberlake
Basic principles involved in the financing of business enterprises. Prerequisite: Accounting 1–2. MTWTh 11:10 A.M. to 12:15 P.M.

138 *Investments* (3) — ———
Analysis of factors of investment credit with application to different types of investments, proper selection of investments for various classes of investors, regulation. Prerequisite: Accounting 1–2. MW 5:45 to 8:00 P.M.

232 *Seminar in Business Finance* (3) — Dockeray
Research in advanced financial problems. MW 6:10 to 8:00 P.M.

291 *Seminar in Business Management* (3) — Dockeray
Research on various phases of management, including business, industrial, and personnel management. MW 8:10 to 10:00 P.M.

CHEMISTRY

11–12 *General Chemistry* (4–4) — Harkness, ———
Chemistry 11–12 is an elementary course in general chemistry. Full-year course: credit is not given for Chemistry 11 until Chemistry 12 is completed. Prerequisite: one year of high school algebra. Students with credit for one term of general chemistry (college level) may enter Chemistry 12 on July 19. Laboratory fee, $16.50 for each half. Nine-week term ending August 20. 8:30 A.M. to 1:20 P.M.

21 *Qualitative Inorganic Analysis* (4) — Vincent
Theoretical and practical study of methods of separating and identifying the more common cations and anions using semi-micro techniques. Prerequisite: Chemistry 12. Laboratory fee, $16.50. Eight-week term. TWThF 1:10 to 5:00 P.M.

22 *Quantitative Inorganic Analysis I* (4) — Schmidt
Theory and practice of quantitative analysis by typical volumetric and gravimetric procedures. Prerequisite: Chemistry 21. Laboratory fee, $16.50. Eight-week term. TWThF 1:10 to 5:00 P.M.

151–52 *Organic Chemistry* (4–4) — Wrenn, ———
Chemistry of the compounds of carbon. Full-year course: credit is not given for Chemistry 151 until Chemistry 152 is completed. Prerequisite: Chemistry 21. Chemistry 151—laboratory fee, $10; Chemistry 152 laboratory fee, $16.50; Students who have credit for Chemistry 151 may enter Chemistry 152 on July 19. Nine-week term ending August 20. 8:30 A.M. to 1:20 P.M.

295–96 *Research* (arr.) — The Staff
Research on problems approved by the Staff. Open to qualified students with advanced training. Laboratory fee, $7 a semester hour. Hours and credits to be arranged.

299–300 *Thesis* (3–3) The Staff
Laboratory fee, $16.50 a term. Hours to be arranged.

ECONOMICS*

1 *Principles of Economics** (3) Burns, _____
Survey of major economic institutions and economic problems in contemporary society. Section A: 10:10 A.M.; section B: MTWTh 5:55 to 7:00 P.M.

2 *Principles of Economics* (3) _____
Continuation of Economics 1. Section A: MTWTh 11:10 A.M. to 12:15 P.M.; section B: 7:10 P.M.

101 *Economic Analysis* (3) Watson
Introduction to formal economic theory; advanced analysis of demand and supply relations. MTWTh 7:55 to 9:00 A.M.

102 *Economic Analysis* (3) Sadove
Continuation of Economics 101. 7:10 P.M.

121 *Money and Banking* (3) Fackler
Theory of money, credit, and banking; commercial banking and the Federal Reserve System; other financial institutions; international aspects of money; current financial problems. 12:10 P.M.

181 *International Economics* (3) _____
Survey of world economics, theory of international trade, analysis of international economic problems, and the international organizations. 9:10 A.M.

182 *International Economics* (3) _____
Continuation of Economics 181. MTWTh 5:55 to 7:00 P.M.

213 *Economic Thought in the Twentieth Century* (3) Burns
The principle trends in economic thought during the present century. TTh 6:10 to 8:00 P.M.

284 *United States Foreign Economic Policy* (3) _____
Analysis of foreign aid program; international, commercial, and monetary policy of the United States; United States and international economic organization. MW 7:10 to 9:00 P.M.

297–98 *Thesis* (School of Government majors) (3–3) The Staff

299–300 *Thesis* (Columbian College majors) (3–3) The Staff

Air Force Military Economics and Politics Program

272 *Applied Economic Analysis* (3) Watson
TTh 10:10 to 12:00 A.M.

* Economics 1–2 is prerequisite to all other courses in Economics.

EDUCATION

Pre-Session

June 11 to June 29

109 *Learning and Teaching* (3) — Ruffner
For the general student as well as the prospective teacher. Nature of learning approached through the study of actual classroom situations. 10:00 to 12:00 A.M.; small group discussions, conferences, and field work in afternoon.

219 *Elementary School Classroom Procedures** (3) — LaBue
Current classroom practices with particular emphasis on ways of planning, unit teaching, techniques in discipline; individual and group evaluation techniques, resources for learning, providing for individual differences. 8:00 to 10:00 A.M.; conference hour, 10:10 A.M.; small group discussions and field work in the afternoon.

245 *School and Community** (3) — Angel
The school as an important member of a team of social agencies that builds the community. 8:00 to 10:00 A.M.; conference hour, 10:10 A.M.; small group discussions and field work in afternoon.

255 *Secondary Education** (3) — Root
Current proposals for the reorganization of secondary education. 10:00 to 12:00 A.M.; conference hour, 9:10 A.M.; small group discussions and field work in the afternoon.

Twelve-Week Evening Session

First Half—June 11 to July 20

109 *Learning and Teaching* (3) — Withall
For the general student as well as the prospective teacher. Nature of learning approached through the study of actual classroom situations. MW 6:40 to 9:00 P.M.; conference hour, 6:00 P.M.

Second Half—July 23 to August 31

110 *Learning and Teaching* (3) — Detwiler
For the general student as well as the prospective teacher. Nature of teaching approached through the study of actual classroom situations. MW 6:40 to 9:00 P.M.; conference hour, 6:00 P.M.

Special Six-Week Session

First Half—July 2 to July 20

110 *Learning and Teaching* (3) — Ruffner
For the general student as well as the prospective teacher. Nature of teaching approached through the study of actual classroom situations. 10:00 to 12:00 A.M.; small group discussions, conferences, and field work in the afternoon.

* Prerequisite: adequate professional preparation.

117 *Elementary School Science* (3) St.Cyr
For teachers. Materials and methods. Prerequisite: Education 109–10 and 121–22 or teaching experience. 8:00 to 10:00 A.M.; conference hour, 10:10 A.M.; small group discussions, laboratory, and field work in the afternoon.

207 *Curriculum Materials** (3) Bish
For experienced teachers. Construction of courses of study, resource units, classroom teaching aids, and inexpensive materials; direct application to student's own situation. 8:00 to 10:00 A.M.; conference hour, 10:10 A.M.; small group discussions and field work in the afternoon.

256 *Secondary Education** (3) Root
Current problems in each of the subject-matter fields. 10:00 to 12:00 A.M.; conference hour, 9:10 A.M.; small group discussions and field work in the afternoon.

Second Half—July 23 to August 10

121 *Society and the School* (3) St.Cyr
For the general student as well as the prospective teacher. The local, national, and international roles of education; cooperation of the school with other community agencies. 10:00 to 12:00 A.M.; small group discussions, conferences, and field work in the afternoon.

128 *Children's Literature* (3) Wilson
Exploring and evaluating the newer books for children and the children's classics, understanding the contributions of literature in child development, appreciating children's original expressions. Prerequisite: Psychology 1 and 29 or teaching experience. 8:00 to 10:00 A.M.; conference hour, 10:10 A.M.; small group discussions and field work in the afternoon.

225 *Elementary School Reading** (3) Coleman
Developmental and remedial approaches to reading problems. Demonstrations of diagnostic and corrective techniques used in the Reading Clinic. 8:00 to 10:00 A.M.; conference hour, 10:10 A.M.; small group discussions and field work in the afternoon.

231 *Secondary School Classroom Procedures** (3) Bish
Survey of current classroom practices with particular attention to selected topics such as teacher-pupil planning, group procedures, pupil security, initiatory and culminating activities, individual and group examination techniques. 10:00 to 12:00 A.M.; conference hour, 9:10 A.M.; small group discussions and field work in the afternoon.

Full Period—July 2 to August 10

209 *Adolesceent Growth and Development** (3) LaBue
An interdisciplinary approach to child development, taking into account such factors as society and culture, socialization, and socializing agents with particular emphasis on the home and school. 11:30 A.M. to 12:30 P.M.; conference hour, M 10:20 A.M. and W 2:00 P.M.

* Prerequisite: adequate professional preparation.

215 *Education of the Exceptional** (3) LaBue
For classroom teachers. A survey of current problems in the education and guidance of exceptional pupils. Nature and needs of those physically, mentally, or emotionally handicapped; needs of the gifted. Resources for help in correction, diagnoses, therapy, education, and guidance. 2:10 to 3:10 P.M.; conference hours, T 1:00 P.M. and Th 3:20 P.M.

218 *Contemporary Problems in Education** (3) Jarman
Social foundations of education—a study of the forces that shape the policies and offerings of the school. 9:10 to 10:10 A.M.; conference hours, T 10:20 A.M. and Th 11:30 A.M.

229 *Administration of Elementary Education* (3) ————
For experienced teachers and administrators. Administration as a means of achieving instructional objectives, organizing learning and teaching activities, handling supplies and equipment, maintaining the building, and integrating school and community life. Emphasis upon guide lines to action. 3:20 to 4:20 P.M.; conference hours, T 2:10 and Th 4:30 P.M.

241 *Education of the Gifted** (3) Indorf
For classroom teachers. Nature and discovery of giftedness; provisions for the gifted in regular classes; experimental projects. MW 6:40 to 9:00 P.M.; conference hour, MW 6:00 P.M.

243 *Human Relations in the Classroom** (3) ————
Principles and practices involved in interpersonal relationships between learner and teacher and among learners. TTh 6:40 to 9:00 P.M.; conference hour, TTh 6:00 P.M.

251 *Guidance in Secondary Schools** (3) Brougher
Scope; needs; organization of the program; services to students, the instructional staff, and the administration; personnel needed for the program. 8:00 to 9:00 A.M.; conference hours, MW 9:10 A.M.

271 *The Teacher and School Administration** (3) Fox
A survey course for teachers and prospective administrators. Education and world affairs, national agencies, role of the state, local administration, school finance, legal controls, school plant, public support, democratic administrative procedures, improving teaching conditions. 10:20 to 11:20 A.M.; conference hours, T 9:10 A.M. and Th 2:10 P.M.

276 *Seminar: Public Relations in School Administration** (3) Root
Purposes, gathering materials, disseminating agencies, publicity media, public participation in policy-making. MW 6:40 to 9:00 P.M.; conference hour, 6:00 P.M.

280 *Adult Education** (3) Ruffner
The adult as a learner, the teacher of adults, learning-teaching activities, administration of adult education programs. TTh 6:40 to 9:00 P.M.; conference hour, 6:00 P.M.

* Prerequisite: adequate professional preparation.

295 *Educational Research Methods and Procedures* (3) — Fox

Required of all Master's candidates following Plan 2. 1:00 to 2:00 P.M.; conference hours, MW 2:10 P.M.

297 *Reading in Education* — The Staff

To assist those preparing for the comprehensive examination. No credit toward degree requirements. Tuition fee, $16. 4:30 to 5:30 P.M.

299–300 *Thesis* (3–3) — The Staff

Required of all Master's candidates following Plan 1. Time to be arranged.

Post-Session

August 13 to August 31

122 *Society and the School* (3) — St.Cyr

For the general student as well as the prospective teacher. Organization and operation of schools; principles and functions. 10:00 to 12:00 A.M.; small group discussions, conferences, and field work in the afternoon.

212 *Evaluation in Education** (3) _____

Concept of evaluation, relationship between evaluation of ends and means, steps involved in the evaluation of learning outcomes. As the course progresses each student develops solutions for evaluation problems related to his work situation. TTh 6:40 to 9:00 P.M.; conference hour TTh 6:00 P.M.

ENGLISH

English Composition †

First Group

A *English Practice* (3) — Cole, Allee

Instruction, drill, and exercises in grammar, vocabulary, spelling, and mechanics in general; instruction and exercises in composition and reading. This course is designed to prepare students for English I. Section A: 10:10 A.M.; section B: 8:10 P.M.

* Prerequisite: adequate professional preparation.

† Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those students who show marked superiority may, upon passing further tests, be exempted from one or both terms of the English Composition course; those who are inadequately prepared for English 1 will be assigned to English A.

All pre-Columbian College students (who are required to take one year of English composition and one year of literature in English, Classical Languages, French, German, or Spanish) will follow the sequence of English 1, both terms of one of the introductory literature courses, and English 4. English 2 is the second term of the six-hour composition course required of students not following the pre-Columbian College curricula.

English 1 is prerequisite to all other courses in English.

B *English for Foreign Students* (3) — Allee
A course in reading and writing designed to prepare the student for English 1. Special attention is given to spelling, syntax, grammar, idiom, and vocabulary. 6:10 P.M.

1 *English Composition** (3) — Moore, Cook
Review of grammar, exercises in composition, readings. Section A: 10:10 A.M.; section B: 7:10 P.M.; section C: 8:10 P.M.

2 *English Composition** (3) — Turner, Cook
Continuation of English 1. Section A: 11:10 A.M.; section B: 7:10 P.M.

4 *English Composition** (3) — Moore, Reno
A course in critical analysis and practice of expository and argumentative techniques and in research procedure. This is the second term of the six-hour composition course required of students in the pre-Columbian College curricula. Prerequisite: English 1 and both terms of an introductory literature course. Section A: 11:10 A.M.; section B: 7:10 P.M.

11 *The Writing of Reports* (3) — Turner and Staff
Theory and practice in the writing of technical reports. Section A: 10:10 A.M.; section B: 6:10 P.M.

English Literature†

51 *Introduction to English Literature* (3) — Tupper, Highfill
A historical survey. From beginnings to 1800. Section A: 9:10 A.M.; section B: MTWTh 7:10 to 8:15 P.M.

52 *Introduction to English Literature* (3) — Reno, Shepard
A historical survey. Literature since 1800. Section A: 8:10 A.M.; section B: MTWTh 5:55 to 7:00 P.M.

135 *Shapespeare* (3) — Tupper
The comedies and histories. MTWTh 11:10 A.M. to 12:15 P.M.

140 *Milton* (3) — Linton
10:10 A.M.

141 *Neoclassical Literature* (3) — Highfill
MTWTh 5:55 to 7:00 P.M.

165 *Modern Poetry and Critisism* (3) — Linton
9:10 A.M.

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* See footnote (†) on page 43.

† All pre-Columbian College students (who are required to take one year of English composition and one year of literature in English, Classical Languages, French, German, or Spanish) will follow the sequence of English 1, both terms of the introductory literature course, and English 4.

English 51–52, 71–72, 91–92, Classical Languages 71–72, French 51–52, German 51–52, or Spanish 51–52 is prerequisite to all second-group courses except English 125 and 126.

295 *Studies in the History of English Literary Criticism* (3) — Shepard
Open to the undergraduate with the approval of the instructor. TTh 7:30 to 9:30 P.M.

American Literature*

71 *Introduction to American Literature* (3) — Cole, Erno
A historical survey. From beginnings to 1860. Section A: 11:10 A.M.; section B: MTWTh 5:55 to 7:00 P.M.

72 *Introduction to American Litreature* (3) — Bolwell, Erno
A historical survey. Literature since 1860. Section A: 10:10 A.M.; section B: MTWTh 7:10 to 8:15 P.M.

174 *Contemporary American Poetry* (3) — Coberly
7:10 P.M.

176 *Twentieth-Century American Drama* (3) — Bolwell
11:10 A.M.

277 *Studies in Twentieth-Century American Fiction* (3) — Coberly
MW 8:10 to 10:00 P.M.

GEOGRAPHY

51 *Introduction to Geography* (3) — Westermann
A study of place attributes and characteristics; patterns and associations of physical and cultural earth features. 6:10 P.M.

52 *World Regions* (3) — Murphy
The analysis of world regional divisions; description and interpretation of physical-cultural complexes; evaluation of regional differences as they affect the distribution and activities of man. 8:10 A.M.

171 *Field Geography* (3) — Westermann
Field study methods: training in mapping and analysis techniques for both rural and urban areas. Prerequisite: Geography 51 and 52. Transportation fee, $16.50. S 8:00 A.M. to 4:00 P.M.

231 *Seminar: Conservation Problems* (3) — Murphy
TTh 6:00 to 8:00 P.M.

GERMAN

1–2 *First-year German* (3–3) — Rogers, King
The essentials of German grammar, translation of easy prose. Full-year course: credit is not given for German 1 until German 2 is completed. Second half begins July 16. Section A: 9:10 to 11:00 A.M.; section B: 6:10 to 8:00 P.M.

* See footnote (†) on page 44.

3–4 *Second-year German* (3–3) The Staff
Selections from modern German prose, review of grammar. Full-year course: credit is not given for German 3 until German 4 is completed. Prerequisite: German 1–2 or two years of high school German. Second half begins July 16. Section A: 9:10 to 11:00 A.M.; section B: 6:10 to 8:00 P.M.

49 *German Readings for Non-major Students* (3) Legner
Designed primarily for graduate students preparing for reading examinations. Undergraduates admitted with the permission of the instructor. No academic credit for graduate students. June 18 to July 13. 6:10 to 8:00 P.M.

HISTORY*

39 *The Development of European Civilization to 1648* (3) Kayser
Primarily for freshmen. The political, social, economic, and cultural history of the Old World from ancient times through the Reformation period. 7:00 A.M.

40 *The Development of European Civilization since 1648* (3) Davis
Primarily for freshmen. The political, social, economic, and cultural history of the Old World from the Reformation period to the present. MTWTh 5:55 to 7:00 P.M.

71 *The Development of the Civilization of the United States to 1865* (3) Davis
Primarily for sophomores. The political, social, economic, and cultural forces of the United States from the period of discovery through the Civil War. 9:10 A.M.

72 *The Development of the Civilization of the United States since 1865* (3) Haskett
Primarily for sophomores. The political, social, economic, and cultural forces of the United States in their world setting from 1865 to the present. MTWTh 7:10 to 8:15 P.M.

130 *Nationalism* (3) Kayser
The historical evolution of modern nationalism. 8:00 A.M.

164 *South America since Independence* (3) Davis
Development of the independent South American states in the 19th and 20th centuries. MTWTh 7:10 to 8:15 P.M.

172 *Social History of the United States* (3) Gray
Daily life, institutions, intellectual and artistic achievements of the Urban-Industrial Era—1861 to the present time. 10:10 A.M.

* History 39–40 is prerequisite to courses 109 through 152 and 193 through 196; History 71–72, to courses 164 through 184.

173 *Representative Americans* (3) — Gray
A biographical approach to national history. Some fifty significant and pivotal personalities in the development of the United States in government, business, science, religion, journalism, the arts, and social reform. 9:10 A.M.

176 *Political and Constitutional History of the United States* (3) — Haskett
The programs and conflicts of group interests in America within the political and legal framework: the Civil War to 1940. MTWTh 5:55 to 7:00 P.M.

181 *Diplomatic History of the United States to 1871* (3) — Merriman
Tendencies toward isolation, expansion, and collectivism; disputes with foreign countries and their settlement; and the activities of American secretaries of state and diplomatic agents. To 1871. 8:00 A.M.

182 *Diplomatic History of the United States since 1871* (3) — Merriman
Tendencies toward isolation, expansion, and collectivism; disputes with foreign countries and their settlement; and the activities of the American secretaries of state and diplomatic agents. Since 1871. 11:10 A.M.

199–200 *Proseminar: the Literature and Method of History* (3–3) — The Staff
Limited to majors in History. Hours to be arranged.

291–92 *Seminar* (3–3) — The Staff
Prerequisite: approval of the Department. Hours to be arranged.

299–300 *Thesis* (3–3) — The Staff
Required of all candidates for the Master's degree specializing in history. Hours to be arranged.

LAW

First Session

101 *Legal Method and Legal System* (4) — Merrifield
Introduction to substantive and procedural law dealing with basic concepts; training in method and technique of case law and legislation using modern case records; practice in use of law books and in legal writing; importance of language in law; legal reasoning and use of precedents under doctrines of stare decisis, law of the case, and res judicata; development of Anglo-American legal system; organization of judiciary and bar, stressing enforcement of ethical standards. 5:50 to 7:40 P.M.

111 *Contracts I* (4) — Mayo
Mutual assent: offer and acceptance, consideration, parol evidence rule, Statute of Frauds, third party beneficiaries, assignments, conditions. 5:50 to 7:40 P.M.

205 *Civil Procedure* (4) Burke, ————
Pleadings, discovery, joinder, forms of trial and related proof problems; emphasis on Federal Rules and other modern code reforms. Section A: 9:10 to 11:00 A.M.; section B: 5:50 to 7:40 P.M.

223 *Domestic Relations* (2) Mallison
Marriage, annulment, and divorce; adoption and custody of children; economic relations. MW 11:10 A.M. to 1:00 P.M.; F 12:10 to 1:00 P.M.

285 *Trusts and Estates* (4)
Formalities of execution of wills; problems of construction, revocation, contest; intestate succession. Creation of trusts, inter vivos and testamentary; administration of decedents' estates and trust estates. 5:50 to 7:40 P.M.

303 *Administrative Law* (4) Davison
The position of the administrative process in the separation of powers, including the status of administrative personnel, administrative hearings, judicial scrutiny of administrative action, discretion, and rule-making—particularly as relating to federal administrative agencies. 9:10 to 11:00 A.M.

317 *Creditors' Rights* (4)
Remedies of unsecured creditors; judgments, fraudulent conveyances, creditors' agreements, equity and statutory receiverships, and bankruptcy. The general approach is that of law administration. 5:50 to 7:40 P.M.

333 *Legislation* (2) Mallison
The legislative process, with particular emphasis on its operation in the federal and state governments; legislative organization and procedure; kinds of statutes; statutory interpretation. TTh 11:10 A.M. to 1:00 P.M.; F 11:10 to 12:00 A.M.

SECOND SESSION

112 *Contracts II* (2) Garrett
Scope of protection afforded contracts; specific performance of contracts other than land transactions. TTh 5:50 to 8:05 P.M.

123x *Criminal Law and Procedure* (4) Cooper
Origin and purposes of criminal law; elements of criminal liability; mental disorders; solicitation, attempt, and conspiracy; crimes against the person, against property, and against both; statutory offenses; criminal procedure, with consideration of Federal Rules of Criminal Procedure. 5:50 to 7:40 P.M.

138 *Real Property* (2) Benson
Historical background of estates and conveyances; possessory estates; concurrent estates. MTh 5:50 to 8:05 P.M.

208 *Evidence* (4) Fryer, Weston
Functions of court and jury; witnesses; hearsay, opinion, circumstantial evidence; proof of authenticity and contents of writings. Section A: 9:10 to 11:00 A.M.; section B: 5:50 to 7:40 P.M.

214 *Legal Accounting* (2) — Garrett
Elementary accounting principles and techniques; application of accounting principles to legal problems. 11:10 to 12:00 A.M.

247x *Commercial Paper* (4) — Orentlicher
Bills of exchange, promissory notes and checks, especially under the Negotiable Instruments Law. 5:50 to 7:40 P.M.

270 *Corporations* (4) — Weaver
Legal requirements as to contributions of capital; powers and rights of corporations, corporate officials, and shareholders. 9:10 to 11:00 A.M.

315x *Conflict of Laws* (4) — _____
Study of cases involving foreign elements; principles of jurisdiction and limitations upon its exercise; procedure, torts, workmen's compensation, contracts, property, family law, administration of estates, business associations. 5:50 to 7:40 P.M.

337x *Future Interests* (2) — Benson
Future interests at common law and under modern statutes; construction of limitations; powers of appointment; rule against perpetuities. MTh 5:50 to 8:05 P.M.

MATHEMATICS

3 *College Algebra* (3) — The Staff
Prerequisite: one year each of high school algebra and high school geometry. Section A: 9:10 A.M.; section B: 7:10 P.M.

6 *Plane Trigonometry* (3) — The Staff
Prerequisite: two years of high school algebra and one year of high school geometry, or Mathematics 3. Section A: 10:10 A.M.; section B: 6:10 P.M.

12 *Analytic Geometry* (3) — The Staff
Prerequisite: Mathematics 6, or two years of high school algebra, one year of high school geometry, and one-half year of high school trigonometry. Section A: 11:10 A.M.; section B: 7:10 P.M.

19 *Differential Calculus* (3) — The Staff
Prerequisite: Mathematics 12. Section A: 10:10 A.M.; section B: 6:10 P.M.

20 *Integral Calculus* (3) — The Staff
Prerequisite: Mathematics 19. Section A: 11:10 A.M.; section B: 7:10 P.M.

103 *Calculus and Differential Equations* (3) — The Staff
Prerequisite: Mathematics 20. Section A: 9:10 A.M.; section B: 6:10 P.M.

139 *Advanced Calculus* (3) — The Staff
Prerequisite: Mathematics 20. 6:10 P.M.

171 *Vector Analysis* (3) Taylor
Prerequisite: Mathematics 20. 7:10 P.M.

PHARMACY

192 *Hospital Pharmacy: Prescription Practice* (1) Cooper
Prescription practice in the University Hospital Pharmacy. Prerequisite: Pharmacy 102. Laboratory—time to be arranged.

194 *Manufacturing Pharmacy* (3) Cooper
The manufacture of bulk pharmaceuticals in the University Hospital Pharmacy. Elective for seniors. Lecture and laboratory—time to be arranged.

PHILOSOPHY

51 *Introduction to Philosophy* (3) Womack
A critical introduction to the problems of modern philosophy in relation to scientific and social developments since the Renaissance. TWTh 7:10 to 8:35 P.M.

52 *Introduction to Philosophy* (3) Womack
A continuation of the material in Philosophy 51. This course may be taken prior to and independently of, or concurrently with, Philosophy 51. TWTh 11:10 A.M. to 12:35 P.M.

142 *Philosophies Men Live By* (3) Womack
A thorough presentation of the great philosophies, eastern and western, that have served men as practical guides for everyday living and have moulded the values of their cultures and institutions. The aim of the course is to focus our major philosophical traditions upon contemporary personal and social problems. TWTh 5:35 to 7:00 P.M.

PHYSICS

5 *General Physics* (3) Koehl
An introduction to the phenomena of light, heat, force, energy, and the properties of matter. This course may be taken as a terminal course by non-science students who wish an introduction to the physical sciences. Prerequisite: high school algebra and plane geometry. Material fee, $10. Lecture—MW 1:10 P.M.; recitation—TTh 1:10 P.M.; laboratory—TTh 2:10 to 4:30 P.M.

7 *General Physics* (3)
Elementary electricity and magnetism. Prerequisite: Physics 5*; high school algebra and plane geometry. Material fee, $10.

Section	*Lecture*	*Recitation*	*Laboratory*
A	TTh 1:10 P.M.	MW 1:10 P.M.	MW 2:10– 4:30 P.M.
B	TTh 6:10 P.M.	MW 6:10 P.M.	TTh 8:10–10:30 P.M.
C	TTh 6:10 P.M.	MW 7:10 P.M.	MW 8:10–10:30 P.M.

* This prerequisite may be waived for students who have credit for a high school physics course which included individual laboratory work, providing they pass the qualifying examination given at the dates specified in the University calendar.

8 *General Physics* (3) Koehl
Foundation of modern physics—the experimental evidence concerning light waves and quanta, X-rays, and radiowave; electrons, protons, and other elementary particles; atomic and molecular structure; and nuclear physics. Prerequisite: Physics 6 and 7. Lecture —MW 5:45 to 7:00 P.M.; recitation—TTh 6:10 P.M.

POLITICAL SCIENCE*

9 *Government of the United States** (3) Brewer, Le Blanc
Fundamental principles of political science. The structure, powers, and operation of the Federal Government: Congress, the President, and the Supreme Court. Section A: 11:10 A.M.; section B: MTWTh 7:10 to 8:15 P.M.

10 *Government of the United States** (3) Ludden
Analysis of the structure, powers, and operation of state and local government; political parties, pressure groups, and civil rights. Major functions of government at federal, state, and local levels. MTWTh 5:55 to 7:00 P.M.

107 *Problems in Modern Political Thought* (3) Kraus
Development of democratic political institutions and analysis of the main challenges to constitutional democracy in the 19th and 20th centuries. 9:10 A.M.

111 *Introduction to Comparative Government* (3) Kraus
The government and politics of the principal constitutional democracies of Western Europe, with special attention to Great Britain and France. MTWTh 5:55 to 7:00 P.M.

121 *The Constitution of the United States* (3) West
The judicial power of the federal courts in constitutional interpretation. Special attention to state and federal relationships, taxation, and legislative-executive-judicial relationships. 10:10 A.M.

146 *Political Pressures and Public Reactions* (3) Ludden
Public opinion, special interest lobbies, and pressure groups as they operate on government to influence public policy. 11:10 A.M.

151 *Public Administration* (3) LeBlanc
Introductory survey of the theory and practice of governmental administration and its relation to politics, legislation, the courts, and non-governmental organizations and interests. MTWTh 5:55 to 7:00 P.M.

171 *International Politics* (3) Ludden
Basic forces underlying the conduct of international relations and the formation of foreign policy: power politics, imperialism, collective security, and international cooperation. MTWTh 7:10 to 8:15 P.M.

181 *International Law* (3) Brewer
General survey of the public law of nations with particular emphasis on the law of peace. 10:10 A.M.

* Political Science 9–10 is prerequisite to all other courses in Political Science.

209 *Seminar: the Federal Government of the United States* (3) — West
Advanced research emphasizing the legislative problems of Congress and the relations of Congress with the Administration. MW 8:10 to 10:00 P.M.

213 *Readings in Comparative Government* (3) — Kraus
Readings and group discussions in the field of comparative political and administrative institutions, with particular attention to such topics as legislatures, executive departments, bureaucracy, political parties, etc. TTh 8:10 to 10:00 P.M.

241 *Human Relations in Administration** (3) — Torpey
Application of scientific principles to human relations in work situations; problems of communication, organization, etc. TTh 8:10 to 10:00 P.M.

281 *Seminar: International Law and Relations* (3) — Brewer
Research topics in the public law of nations, with special attention to problems of pacific settlement, sanctions, war, neutrality, and state jurisdiction, and to their political implications. MW 8:10 to 10:00 P.M.

299–300 *Thesis* (3–3) — The Staff
Time to be arranged.

PSYCHOLOGY

1 *General Psychology*† (3) — Tuthill, Fox
The fundamental principles underlying human behavior. Section A: 9:10 A.M.; section B: MWF 5:35 to 7:00 P.M.

22 *Introduction to Educational Psychology* (3) — Fox
Consideration of individual and group differences, adjustments, and the psychology of learning in relation to education and training. 10:10 A.M.

29 *Child Psychology* (3) — Johnson
A genetic approach to the study of the child. MWF 11:10 A.M. to 12:35 P.M.

98 *Abnormal Psychology* (3) — Hunt
The causes, diagnosis, treatment, and prevention of the various types of maladjustments and mental disorders. MWF 5:35 to 7:00 P.M.

129 *Introduction to Counseling and Guidance* (3) ———
A survey of the basic principles, techniques, and procedures as applied to vocational, educational, and personal counseling. TTh 5:45 to 8:00 P.M.

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* Primarily for majors in the School of Government.
† Psychology 1 is prerequisite to all other courses in Psychology.

131 *Psychological Tests* (3) — Hunt
A survey of psychological tests and their more common uses in business, industry, government, law, medicine, and education. Material fee, $6. MW 7:10 to 9:25 P.M.

144 *Personnel Psychology* (3) — Mosél
The applications of psychology to personnel work in education, business, industry, and government. MW 5:45 to 8:00 P.M.

156 *Psychology of Propaganda and Public Opinion* (3) — Tuthill
The psychology of opinion formation, the measurement of opinion, the social determinants of attitudes, the psychological processes in propaganda, the bases of receptivity to propaganda, psychological warfare. MW 7:10 to 9:25 P.M.

171 *Psychology of Personality* (3) — Caldwell
Contemporary approaches to the study of personality. TTh 5:45 to 8:00 P.M.

193 *Readings in Psychology* (3) — The Staff
Supervised readings on specific topics in psychology, with conferences, for undergraduate majors. Open only to seniors with eighteen or more credits in psychology with a quality-point index of 3.00 or higher. Admission by permission of the instructor. Hours to be arranged.

205 *Field Work in Psychology* (3) — The Staff
Supervised field work in agencies providing psychological service. Admission by permission of the Executive Officer of the Department. Hours to be arranged.

207 *Readings in Psychology for Graduate Students* (3) — The Staff
Supervised readings with conferences on specified topics in psychology. Admission by permission of the instructor. Hours to be arranged.

225 *Seminar: Mental Hygiene* (3) — Caldwell
A study of mental health problems with special attention to programs of prevention. TTh 8:10 to 10:00 P.M.

233 *Individual Psychological Testing* (3) — Johnson
Instruction and practice in giving of the Binet Test and the Wechsler-Bellevue Test. Emphasis is placed on testing children and adolescents. Prerequisite: an elementary course in tests and measurements. Material fee, $6. MW 1:10 to 3:00 P.M.

244 *Seminar: Job Analysis and Evaluation* (3) — Mosél
MW 8:10 to 10:00 P.M.

295 *Research in Psychology* (arr.) — The Staff
Hours and credits to be arranged.

299 *Thesis* (3) — The Staff

RELIGION

60 *History of Religion* (3) — Olmstead
Judaism, Christianity, and Islam; analysis of their origin, evolution, and contemporary status. MWF 11:10 A.M. to 12:35 P.M.

122 *Christian Ethics and Modern Society* (3) — Olmstead
A study of the nature and principles of the Christian life as developed by the Christian community; problems of personal conduct; the application of the Christian standard to family, social, and economic institutions. TWTh 6:10 to 7:35 P.M.

ROMANCE LANGUAGES AND LITERATURES

French

1–2 *First-year French* (3–3) — The Staff
For beginners. Grammar, composition, drill in pronunciation, translation of modern French prose. Full-year course: credit will not be given for French 1 until French 2 is completed. Second half begins July 16. Section A: 8:10 to 10:00 A.M.; section B: 6:10 to 8:00 P.M.

3–4 *Second-year French* (3–3) — The Staff
Advanced grammar and composition, reading in modern French prose, oral practice, introduction to French civilization. Full-year course: credit will not be given for French 3 until French 4 is completed. Prerequisite: French 1–2 or two years of high school French. Second half begins July 16. Section A: 8:10 to 10:00 A.M.; section B: 6:10 to 8:00 P.M.

9–10 *French Conversation and Composition* (3–3) — The Staff
Second half begins July 16. 6:10 to 8:00 P.M.

Spanish

1–2 *First-year Spanish* (3–3) — The Staff
For beginners. Grammar, composition, drill in pronunciation, reading of modern Spanish prose. Full-year course: credit will not be given for Spanish 1 until Spanish 2 is completed. Second half begins July 16. Section A: 8:10 to 10:00 A.M.; section B: 6:10 to 8:00 P.M.

3–4 *Second-year Spanish* (3–3) — The Staff
Advanced grammar and composition, reading of modern Spanish prose, oral practice, introduction to Hispanic civilization. Full-year course: credit will not be given for Spanish 3 until Spanish 4 is completed. Prerequisite: Spanish 1–2 or two years of high school Spanish. Second half begins July 16. Section A: 8:10 to 10:00 A.M.; section B: 6:10 to 8:00 P.M.

9–10 *Spanish Conversation and Composition* (3–3) — The Staff
Second half begins July 16. 6:10 to 8:00 P.M.

SECRETARIAL STUDIES

1 *Elementary Typewriting* (3) — Shott
Fundamental techniques of typewriting, basic styles of business letters, introduction to tabulation, and preparation of general office forms. Laboratory fee, $6. 7:10 to 8:30 P.M.

2 *Intermediate Typewriting* (3) — Shott
The business letter and its arrangement, advanced tabulation, manuscript typing, office forms, stencil cutting, and legal documents. Prerequisite: Secretarial Studies 1 or the equivalent; ability to type accurately at 30 words a minute. Laboratory fee, $6. 7:10 to 8:30 P.M.

11 *Elementary Shorthand and Transcription* (3) — Shott
A study of the principles of Gregg shorthand correlated with dictation and transcription. *Minimum* dictation speed of 60 words a minute attained. Laboratory fee, $2. 6:10 P.M.

SLAVIC LANGUAGES AND LITERATURES

1–2 *First-year Russian* (3–3) — Yakobson
Beginner's course in fundamentals of grammar and pronunciation, with graded reading, oral drill, and written practice. Second half begins July 16. 6:10 to 8:00 P.M.

SOCIOLOGY*

1 *Introductory Sociology* (3) — Stephens, Lavell
The origin and development of culture, man's social nature, types of groups and social institutions, social processes, social change and social control. Section A: 9:10 A.M.; section B: MWF 5:35 to 7:00 P.M.

122 *Culture and Personality* (3) — Stephens
The relationship of individual personality to group membership and cultural conditions, socio-cultural influences on mental health, the relationship of personality to caste, class, and occupation. 10:10 A.M.

132 *Courtship and Marriage* (3) — Lavell
Dating and courtship as social processes, the reasons for marriage, marriage laws, mate selection, husband-wife relations, factors in marriage adjustment, marriage prediction and counseling. MWF 7:10 to 8:35 P.M.

295–96 *Research* (arr.) — The Staff
Time and credits to be arranged.

299–300 *Thesis* (3) — The Staff

* Sociology 1 is prerequisite to all other courses in Sociology.

SPEECH

A *Speech Clinic* — Pettit and Staff
Individual or group lessons, without academic credit, for such speech difficulties as lisping, cleft palate, articulatory problems and stuttering. Fee: for individual lesson, $7; for group lesson, $4. Time to be arranged.

B *American Speech for Foreign Students* (3) — Bielski
Class limited to foreign born students. Instruction in the formation of the sounds of spoken English, with emphasis on rhythm and inflection. The International Phonetic Alphabet is used. Analysis of individual voices through recordings. Recording fee, $3.50. MTWTh 7:10 to 8:15 P.M.

1 *Effective Speaking* (3) — Leggette and Staff
Preparation and delivery of extempore speeches; developing confidence and poise, body and voice control; selecting and organizing material. Recording fee, $3.50. Section A: 8:10 A.M.; section B: 10:10 A.M.; section C: MTWTh 5:55 to 7:00 P.M.

11 *Training the Speaking Voice* (3) — Leggette, Pettit
Developing ease, naturalness, and clarity in the speaking voice. Analysis of individual voices through recordings. Phonetic approach to the study of the sounds of English and the standards of speech. Recording fee, $3.50. Section A: 11:10 A.M.; section B: MTWTh 7:10 to 8:15 P.M.

32 *Oral Reading* (3) — Stevens
Reading to others; theory and practice of interpreting the printed page. Prerequisite: Speech 11. Recording fee, $3.50. 9:10 A.M.

121 *Group Discussion and Conference Leadership* (3) — Henigan
The process of thinking and problem solving in committees and small groups, and the methods of leading conferences and discussions. 11:10 A.M.

177–78 *Clinical Practice in Speech Therapy* (1–1) — Pettit
Case work in remedial speech. This course may be repeated for a total of five credit hours. Prerequisite: Speech 175. Time to be arranged.

183–84 *Clinical Practice in Hearing Therapy* (1–1) — Pettit
Case work with persons handicapped with hearing losses. This course may be repeated for a total of three credit hours. Prerequisite: Speech 182. Time to be arranged.

STATISTICS

51 *Introduction to Business and Economic Statistics* (3) — Johnson
Survey of elementary principles and procedures for presenting, analyzing, and interpreting statistical data; consideration of character-

istic values, measures of variability, sampling processes, index numbers, time series analysis, and simple correlation. Prerequisite: one entrance unit in algebra. Laboratory fee, $8. Lecture—MTWTh 7:10 P.M.; laboratory—TTh 8:10 to 9:50 P.M.

52 *Mathematics of Finance* (3) Johnson
Interest and discount, annuities, valuation of stocks and bonds, sinking funds, amortization, valuation of depletable assets, depreciation, building and loan associations. Prerequisite: one entrance unit in algebra. MTWTh 5:55 to 7:00 P.M.

53 *Introduction to Statistics in Psychology and Education* (3) _____
Sources of data, tabulation, charts and graphs, averages, dispersion, quartiles and percentiles, raw scores and derived scores, profiles, norms and their use, frequency distributions, intelligence and other quotients, reliability and validity of tests, normal curve, correlation, elementary sampling, statistical error, limitations of statistics. Prerequisite: one entrance unit in algebra. Laboratory fee, $8. Lecture TTh 1:10 to 3:00 P.M.; laboratory—TTh 3:10 to 5:00 P.M.

91–92 *Principles of Statistical Methods* (3–3) _____
This course emphasizes the meaning, uses, and applications of: variates and attributes, measurement and enumeration, averages and dispersion, frequency distributions and their characteristics, errors of measurement and their control, index numbers, trends, cyclical relatives, purposive and random sampling in theory and practice and their errors and estimates, correlation in theory, practice, and applications. Prerequisite: one entrance unit in algebra. Laboratory fee, $8 for each half. First half from June 18 to July 13, second half from July 16 to August 10. Students must register for both halves of this course unless permitted to do otherwise, in an extenuating circumstance, by the Executive Officer of the Department of Statistics. Credit will not be given for Statistics 91 until Statistics 92 is completed. Lecture—MTWTh 6:10 to 8:00 P.M.; laboratory—MW 8:10 to 9:50 P.M.

117 *Analysis of Variance* (3) McCall
The analysis of variance and covariance to segregate factors producing significant variation, a method to estimate experimental error, multiple classification with unequal class frequencies. Prerequisite: Statistics 91–92 or its equivalent. MTWTh 5:55 to 7:00 P.M.

118 *Correlation and the Chi-Square Test* (3) McCall
Advanced study of simple, partial, and multiple correlation. Rank correlation, the method of contingency, and the problem of normal and non-normal populations. Tests of independence, likeness, and goodness of fit. Prerequisite: Statistics 91–92 or its equivalent. MTWTh 7:10 to 8:15 P.M.

Air Force Military Economics and Politics Program

208 *Operational Analysis* II (3) _____
Hours to be arranged.

ZOOLOGY

1–2 *Introduction to Zoology* (4–4) Mortensen, Desmond
An introduction to the study of the structure, functions, and relations of animals, and of the fundamental biological principles involved. Material fee, $10. for each half. Nine-week term. Zoology 2 begins July 19 and ends August 20. Lecture—6:10 P.M.; laboratory—7:10 to 10:00 P.M.

145 *Introduction to Vertebrate Embryology* (3) Hansen
The origin and early development of the individual and the formation of organ systems. Emphasis is placed on the frog, chick, and pig, with reference to the human embryo. Material fee, $10. Eight-week term. Lecture—MW 7:10 P.M.; laboratory—MW 8:10 to 10:00 P.M. and TTh 7:10 to 9:00 P.M.

295 *Research* (3) The Staff
Investigation of special problems. Hours to be arranged.

299 *Thesis* (3) The Staff

HOURLY SCHEDULE OF CLASSES—SUMMER SESSIONS 1956•

Morning Classes

7:10	8:10	9:10	10:10	11:10
Acct 111 (MTWTh 7–8:05)	Acct 1	Acct 101	Bot 1 lect (TThF)	Bot 2 lect (F)
Bus Adm 101 (MTWTh 7:55–9)	Chem 11–12† (8:30–1:20)	Econ 181	Bot 1 lab (MW to 12)	Bot 2 lab (TTh to 1)
Econ 101 (MTWTh 7:55–9)	Chem 151–52† (8:30–1:20)	Eng 51A	Econ 1A	Bus Adm 102 (MTWTh to 12:15)
Hist 39 (at 7)	Eng 52A	Eng 165	Econ 272 (TTh to 12)	Bus Adm 131 (MTWTh to 12:15)
	Fr 1–2A‡ (to 10)	Ger 1–2A‡ (to 11)	Eng A—Sect A	Econ 2A (MTWTh to 12:15)
	Fr 3–4A‡ (to 10)	Ger 3–4A‡ (to 11)	Eng 1A	Eng 2A
	Geog 52	Hist 71	Eng 11A	Eng 4A
	Geog 171 (S 8–4)	Hist 173	Eng 72A	Eng 71A
	Hist 130 (at 8)	Math 3A	Eng 140	Eng 135 (MTWTh to 12:15)
	Hist 181 (at 8)	Math 103A	Hist 172	Eng 176
	Span 1–2A‡ (to 10)	Pol Sc 107	Math 6A	Hist 182
	Span 3–4A‡ (to 10)	Psych 1A	Math 19A	Math 12A
	Speech 1A	Soc 1A	Pol Sc 121	Math 20A
		Speech 32	Pol Sc 181	Phil 52 (TWTh to 12:35)
			Psych 22	Pol Sc 9A
			Soc 122	Pol Sc 146
			Speech 1B	Psych 29 (MWF to 12:35)
				Relig 60 (MWF to 12:35)
				Speech 11A
				Speech 121

• Classes meet Monday through Friday unless otherwise indicated. Seminars and research courses for which hours are to be arranged, courses in the Law School, and in the School of Education will be found under the departmental announcements.
† Nine-week term. Second half—July 19 to August 20. ‡ Second half begins July 16.

Afternoon Classes

12:10	1:10	2:10	3:10
Bot 2 lect (MW) Econ 121	Biol 1–2† (to 5) Chem 21 (TWThF to 5) Chem 22 (TWThF to 5) Phys 5 lect (MW) Phys 5 rec (TTh) Phys 7A lect (TTh) Phys 7A rec (MW) Psych 233 (MW to 3) Stat 53 lect (TTh to 3)	Phys 5 lab (TTh to 4:30) Phys 7A lab (MW to 4:30)	Stat 53 lab (TTh to 5)

Evening Classes

MTWTh 5:55–7	6:10	7:10	8:10
Art 71 (MTWThF at 5:10) Bus Adm 109 Bus Adm 138 (MW 5:45–8) Econ 1B Econ 182 Eng 52B Eng 71B Eng 141 Hist 40 Hist 176 Phil 142 (TWTh 5:35–7) Phys 8 lect (MW 5:45–7) Pol Sc 10 Pol Sc 111	Acct 193 Art 72 Bus Adm 232 (MW to 8) Econ 213 (TTh to 8) Eng B Eng 11B Fr 1–2B‡ (to 8) Fr 3–4B‡ (to 8) Fr 9–10‡ (to 8) Geog 51 Geog 231 (TTh 6–8) Ger 1–2B‡ (to 8) Ger 3–4B‡ (to 8) Ger 49§ (to 8)	Acct 1–2‡ (to 9) Acct 132 (TTh to 9:25) Acct 171 (MW to 9:25) Acct 212 (TTh to 9:25) Bus Adm 105 (MW to 9:25) Econ 2B Econ 102 Econ 284 (MW to 9) Eng 1B Eng 2B Eng 4B Eng 51B (MTWTh to 8:15) Eng 72B (MTWTh to 8:15) Eng 174	Bus Adm 291 (MW to 10) Eng A—Sect B Eng 1C Eng 277 (MW to 10) Phys 7B lab (TTh to 10:30) Phys 7C lab (MW to 10:30) Pol Sc 209 (MW to 10) Pol Sc 213 (TTh to 10) Pol Sc 241 (TTh to 10) Pol Sc 281 (MW to 10) Psych 225 (TTh to 10) Psych 244 (MW to 10) Stat 51 lab (TTh to 9:50)

† Nine-week term. Second half—July 19 to August 20. ‡ Second half begins July 16. § June 18 to July 13.

Evening Classes (Continued)

MTWTh 5:55–7	6:10	7:10	8:10
Pol Sc 151	Math 6B	Eng 295 (TTh 7:30–9:30)	Stat 91–92 lab ‡ (MW to 9:50)
Psych 1B (MWF 5:35–7)	Math 19B	Hist 72 (MTWTh to 8:15)	Zoo 145 lab (MW to 10)
Psych 98 (MWF 5:35–7)	Math 103B	Hist 164 (MTWTh to 8:15)	
Psych 129 (TTh 5:45–8)	Math 139	Math 3B	
Psych 144 (MW 5:45–8)	Phys 7B lect (TTh)	Math 12B	
Psych 171 (TTh 5:45–8)	Phys 7B rec (MW)	Math 20B	
Soc 1B (MWF 5:35–7)	Phys 7C lect (TTh)	Math 171	
Speech 1C	Phys 8 rec (TTh)	Phil 51 (TWTh to 8:35)	
Stat 52	Relig 122 (TWTh to 7:35)	Phys 7C rec (MW)	
Stat 117	Russian 1–2‡ (to 8)	Pol Sc 9B (MTWTh to 8:15)	
	Sec. Studies 11	Pol Sc 171 (MTWTh to 8:15)	
	Span 1–2B‡ (to 8)	Psych 131 (MW to 9:25)	
	Span 3–4B‡ (to 8)	Psych 156 (MW to 9:25)	
	Span 9–10‡ (to 8)	Sec Studies 1 (to 8:30)	
	Stat 91–92 lect ‡ (MTWTh to 8)	Sec Studies 2 (to 8:30)	
	Zoo 1–2 lect †	Soc 132 (MWF to 8:35)	
		Speech B (MTWTh to 8:15)	
		Speech 11B (MTWTh to 8:15)	
		Stat 51 lect (MTWTh)	
		Stat 118 (MTWTh to 8:15)	
		Zoo 1–2 lab † (to 10)	
		Zoo 145 lect (MW)	
		Zoo 145 lab (TTh to 9)	

† Nine-week term. Second half—July 19 to August 20.

‡ Second half begins July 16.

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1956-57

THE

GEORGE WASHINGTON UNIVERSITY

BULLETIN

VOL. LV No. 6

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BY THE UNIVERSITY

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THE UNIVERSITY CALENDAR

1956

July

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	..	..	..	..

August

..	..	..	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	..

September

..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
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23	24	25	26	27	28	29
30	..	..	..	..	..	..

October

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14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	..	..	..

November

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4	5	6	7	8	9	10
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December

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30	31	..	..	..	..	..

1957

January

S	M	T	W	T	F	S
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20	21	22	23	24	25	26
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February

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3	4	5	6	7	8	9
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17	18	19	20	21	22	23
24	25	26	27	28	..	..

March

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10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	..	..	..	..	..	..

April

..	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	..	..	..	..

May

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5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	..

June

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9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	..	..	..	..	..	..

July

S	M	T	W	T	F	S
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7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	..	..	..

August

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4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

September

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	..	..	..	..	..

October

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6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	..	..

November

..	..	..	..	..	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

December

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	..	..	..	..

THE UNIVERSITY CALENDAR *
1956–57

Date	Day	Occasion
1956		
FALL SEMESTER:		
Sept. 4–14	Tuesday through Friday	Preadvising for all entering Junior College and School of Engineering students
Sept. 13	Thursday	Orientation Assembly for all new students
Sept. 14 and 17.	Friday and Monday ..	Curriculum assemblies†
Sept. 18	Tuesday	Freshman tests Examinations for students who wish to qualify for advanced courses or waive curriculum requirements
Sept. 19	Wednesday	Meeting of the University Faculty
Sept. 20 and 21.	Thursday and Friday .	Registration*
Sept. 24	Monday	Academic year begins*
Oct. 5	Friday	Last day on which candidates may file thesis subjects for the Master's degrees to be conferred in February
Oct. 11	Thursday	Stated meeting of the Board of Trustees
Oct. 12	Friday	Last day on which candidates may file dissertation subjects for the degrees of Doctor of Philosophy, Doctor of Education, and Doctor of Business Administration to be conferred the following June
Oct. 20	Saturday	Fall Convocation
Nov. 12	Monday	Veterans Day. Holiday
Nov. 22–24 ...	Thursday through Saturday	Thanksgiving recess
Nov. 27	Tuesday	Meeting of the Academic Council
Dec. 13	Thursday	Stated meeting of the Board of Trustees
Dec. 20–Jan. 2.	Thursday through Wednesday	Christmas recess
1957		
Jan. 3	Thursday	Classes resume Last day for receiving theses of candidates for the Master's degrees and for the professional degrees in Engineering to be conferred in February

* In the School of Medicine, registration is conducted September 13 and 14, classes begin September 17.
† All new students are expected to attend one Curriculum Assembly.

THE UNIVERSITY CALENDAR—Continued

Date	Day	Occasion
Jan. 3	Thursday	Last day for receiving dissertations of candidates for the degrees of Doctor of Philosophy, Doctor of Education, and Doctor of Business Administration to be conferred in February
		Last day for receiving dissertations of candidates for the degree of Doctor of Juridical Science to be conferred in June
Jan. 16	Wednesday	Last day of classes for the fall semester
Jan. 21–29	Monday through Tuesday	Examination period
SPRING SEMESTER: Jan. 30	Wednesday	Examinations for students who wish to qualify for advanced courses or waive curriculum requirements
Jan 31 and Feb. 1	Thursday and Friday	Registration
Feb. 4	Monday	Classes resume for the spring semester
Feb. 14	Thursday	Stated meeting of the Board of Trustees
Feb. 15	Friday	Last day on which candidates may file thesis subjects for the Master's degrees to be conferred in June
Feb. 22	Friday	Winter Convocation. Holiday
March 1	Thursday	Applications for fellowships for 1957–58 should be filed
March 14	Thursday	Stated meeting of the Board of Trustees
March 26	Tuesday	Meeting of the University Faculty
April 1	Monday	Applications for scholarships for 1957–58 should be filed
April 12	Friday	Last day for receiving dissertations of candidates for the degrees of Doctor of Philosophy, Doctor of Education, and Doctor of Business Administration to be conferred in June
April 19–24	Friday through Wednesday	Easter recess
April 30	Tuesday	Meeting of the Academic Council
May 3	Friday	Last day for receiving theses of candidates for the Master's degrees and for the professional degrees in Engineering to be conferred in June

THE UNIVERSITY CALENDAR—Continued

Date	Day	Occasion
May 9	Thursday	Annual meeting of the Board of Trustees
May 15	Wednesday	Last day of classes for the spring semester
May 20–28	Monday through Tuesday	Examination period
June 2	Sunday	Baccalaureate Sermon
June 5	Wednesday	Commencement
SUMMER SESSIONS:*		
June 17	Monday	Registration for the eight-week term
June 18	Tuesday	Classes begin
July 4	Thursday	Independence Day. Holiday
Aug. 10	Saturday	Foreign-language examinations for candidates for the Master's degrees
Aug. 12	Monday	Eight-week term ends Last day for receiving theses for the Master's degrees and for the professional degrees in Engineering to be conferred in October
Sept. 6	Friday	Last day for receiving dissertations of candidates for the degrees of Doctor of Philosophy, Doctor of Education, and Doctor of Business Administration to be conferred in October
Sept. 19 and 20	Thursday and Friday	Registration for the fall semester of the academic year 1957–58

* For all schools and colleges offering courses in the Summer Sessions except the Law School and the School of Education.

The dates of the calendar of the Law School will be announced.

The calendar for the special sessions of the School of Education is as follows: Presession, June 10–28; Six-Week Session, July 1–August 9; Postsession, August 12–30. Registration for each of these sessions is on the first day of classes.

OFFICERS AND COMMITTEES OF THE UNIVERSITY

THE BOARD OF TRUSTEES

The Board of Trustees of the University is composed of the President of the University ex officio and the following persons by election:

1957

Walter Maximillian Bastian, LL.B.; United States Court of Appeals
Mrs. Wilbur John Carr; 2300 Wyoming Avenue
Newell Windom Ellison, A.B., LL.B.; 701 Union Trust Building
Gilbert Grosvenor, A.M., LL.D., Litt.D., Sc.D.; National Geographic Society
*Brooks Hays, A.B., LL.B., LL.D.; The House Office Building
Alfred Henry Lawson, LL.B., LL.D.; Riggs National Bank
John Keown McKee; 3010 Forty-fifth Street
Benjamin Mosby McKelway; The Evening Star Building
*James Matlack Mitchell, A.M.; National Science Foundation
Donald D'Arcy Shepard, LL.B.; 1701 K Street
Lloyd Bennett Wilson; Willow Spring, Bluemont, Virginia

1958

John St. Clair Brookes, Jr., A.M., LL.B.; Colorado Building
Homer Cummings, Ph.B., LL.B., LL.D., L.H.D.; 1625 K Street
*Watson Davis, B.S. in C.E., C.E.; 1719 N Street
Robert Vedder Fleming, LL.D.; Riggs National Bank
Charles Carroll Glover, Jr., A.M., LL.B., LL.D.; Riggs National Bank
Godfrey Leon Munter, A.B., LL.B., LL.D.; Shoreham Building
Charles Hook Tompkins, D.Eng.; 907 Sixteenth Street
James Edwin Webb, A.B., LL.D.; 218 N. Robinson Street, Oklahoma City, Oklahoma
Alexander Wetmore, Ph.D., Sc.D.; Smithsonian Institution
*Charles Stanley White, M.D., Sc.D.; 1801 I Street

1959

Clarence Aiken Aspinwall, LL.D.; 1140 Fifteenth Street
Lyman James Briggs, Ph.D., Sc.D., D.Eng., LL.D.; 3208 Newark Street
Eugene Cassin Carusi, A.M., J.D.; Union Trust Building

* Nominated by the alumni.

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THE ELECTRONICS RESEARCH PROJECT

The Electronics Research Project does work in the general field of Nucleonics, the improvement of the operations of photomultiplier tubes, and the development of fast operating coincidence measurements, flip-flop circuits, and pulse generators. This project operates under contracts with the Department of the Navy.

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THE LOGISTICS RESEARCH PROJECT (NAVY)

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ARMY LOGISTICS RESEARCH PROJECT

The Army Logistics Research Project is engaged in bringing scientific effort to bear on the Army's logistic systems. The basic task of the group is to examine the entire logistic system to locate and define problem areas which are susceptible of improvement through research. Activity is underway in two such areas. One area is the design and test of a supply system for support of the Army combat forces in modern warfare. The other is the development of a mathematical model for the creation, review, and analysis of the Army budget.

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John Avis McLaughlin, A.B., *Assistant Treasurer*
Margaret Payne Greene, B.S., *Assistant Treasurer—Contract Research*
John Collum Einbinder, A.B. in Govt., *Business Manager*
John Philip Billheimer, *Plant Engineer*
Jessie Mae Packett, *Assistant to the Treasurer*
Jeannine Delores Miller, *Assistant to the Internal Auditor*
Elizabeth Ann Schubert, *Assistant*

Comptroller's Office

Albert Eldridge Smith, B.C.S., *Assistant Comptroller—Accounting*
Henry Paul Bunting, B.S., *Assistant Comptroller—Hospital*
Mary Louise Lansdale, *Secretary to the Comptroller*

Disbursing Office

Lamar Lyon Burton, B.S., *Assistant Comptroller—Disbursing*
Marie Kauffman Leath, *Assistant to the Disbursing Officer*
Carmen Garcia, *Payroll Supervisor*
Barbara Cunningham, *Allotment and Purchase Order Clerk*
Edith Shelly, *Voucher Assistant*
Helen Gavin Phillips, *Payroll Clerk*
Marlene Kaye Weaver, *Payroll Clerk*
Madeline Leone Smart, A.B., *Chief Accounting Machine Operator*
Crus Vacilia Rodriguez, *Accounting Machine Operator*
Margaret Kurtz, *Accounting Machine Operator*
Ines Jeanne Railey, *Clerk*

Cashier's Office

Joseph Hume Spicer, B.C.S., *Cashier*
William Dewell McCown, A.B., *Assistant Cashier*
Daniel John Tyrrell, *Assistant Cashier*
Nina Jo Hackett, *Assistant*
Betty Lou George, *Assistant*
Barbara Terry, *Assistant*
Nancy Elizabeth Schmidt, *Assistant*
Kathleen Mary Denver, *Assistant*
Joan Story King, *Assistant*
Margaret Busick Richards, *Assistant*

Contract Research Office

Villiam Rydholm, A.B., *Assistant to the Treasurer*
ane Corinne Trayfors, *Assistant*
olly Thuryle McCauley, *Clerk-Typist*

Business Manager's Office

enrietta Rosenblatt, *Assistant to the Business Manager*
ohn Neary, *Assistant to the Business Manager*
incent Duwain Bateman, *Purchasing Agent*
erry LeRoy Johnson, B.B.A., *Assistant Purchasing Agent*
atherine Salter, *Order Clerk*
olores Purvis Kuhle, *Secretary*
etty Louise Broaddus, *Record Clerk*

Plant Engineer's Office

eorge Dewey Eckert, *Superintendent of Shop*
ucille Pleasants, *Clerk, University Shop*

Service Office

dam Clarke Harris, *Assistant Business Manager*
obert Clark, Jr., *Custodial Supervisor*
ohn Joseph Moakley, *Assistant Custodial Supervisor*
onald Edward Pullman, *Supervisor of University Stores*
oseph Mello, Jr., *Grounds Supervisor*
irdie Harris, *Manager of the Student Union*
arolina Hedler, B.S., *Assistant Manager of the Student Union*
Vilhelmina Hamilton, *Assistant in the University Book Store*
boul Zadeh Mansuri, LL.B., *Stores Clerk*
velyn Elizabeth McCoy, *Clerk-Typist in the University Book Store*
rayson Brust Tabler, A.B., *Manager of the Medical Book Store*
Margaret Hughes Pfaefflin, *Chief Telephone Operator*
illa Wright, *Telephone Operator*

TECHNICAL ASSISTANTS IN SCIENCE DEPARTMENTS

Rudolph Bailey, *Stockroom Clerk in Chemistry*
Theodore Ervin Bongort, Jr., *Technician in Medicine*
Fred Buttner, *Technician in Physiology*
James Francis Delaney, Jr., *Photographer in Medical School Photographic Laboratory*
Ian Aziz Fawal, B.S., *Technician in Biochemistry*

Harry Carl Gordon, *Stockroom Clerk in Pharmacy*
Arvilla Copeland Johnson, *Technician in Anatomy*
Charles Robert Midkiff, Jr., *Stockroom Clerk in Chemistry*
Cayetano Nagac, A.B., *Technician in Pathology*
John Deshon Randall, *Technician in Neurology and Neurological Surgery*

OFFICE OF THE DIRECTOR OF ADMISSIONS

Paul Summers Jack, A.B., *Assistant Director of Admissions*
Margaret LeStourgeon Tymeson, A.B., *Assistant to the Director of Admissions*
Jessie Fair Persun, *Evaluator*
Shirley Howerth Richards, A.B., *Evaluator*
Dorothy Tomlin, A.M., *Evaluator*
Jean Wilson McGovern, A.M., *Evaluator*
Philip Arthur Gragan, A.B., *Evaluator*
Vivian Lawrence, *Evaluator*
Eula James, A.M., *Admissions Assistant*
Mary MacLeod Addy, B.S., *Admissions Assistant*
Margaret Ann Abel, *Admissions Assistant*
Mary Fern Elliott, *Clerk-Typist*
Mary Lowell Gamboa, A.B., *Clerk-Typist*
Peggy Pillow, *Clerk-Typist*
Elizabeth Belton, *Admissions Assistant*

OFFICE OF THE REGISTRAR

Catherine Jackson Stancill, *Assistant to the Registrar*
Virginia Rose Schmidt, *Assistant to the Registrar*
Olive Simmons Ussery, *Secretary to the Registrar*
Dorothy May Chan, *Transcript Clerk*
Barbara Ann Brown, *Transcript Clerk*
Mildred Van Horn Lee, *Statistical Clerk*
Beatrice Dickens, *Statistical Clerk*
Patricia Jane Jwaideh, *Record Clerk*
Ann Tydings Tucker, *Record Clerk*
Sonia Fay Seaton, *Record Clerk*
Gladys Mae Oram, *Graduation Clerk*
Shanta Hingorani, *File Clerk*

THE LIBRARY

James Walton, A.B., M.S. in L.S., *Associate Librarian*
Anna Virginia Appich, A.B., *Assistant Librarian, Acquisitions*

Mary Elizabeth Thompson, B.S., B.S. in L.S., *Assistant Librarian, Cataloguing*
Isabella Frances Young, A.B. in L.S., *Assistant Librarian, Medical Library*
Bertha Margarethe Rothe, A.M., B.S. in L.S., LL.B., *Assistant Librarian, Law Library*
David Lewis Moore, A.B., LL.B., *Assistant Librarian, Social Sciences*
Alice Sheftel, B.S., *Assistant, Cataloguing*
Vera Warburton, *Assistant, Medical Library*
Alice Pollock Bray, B.S., B.S. in L.S., *Assistant, Cataloguing*
Dorothy Gillum Bryant, A.M., *Assistant, Circulation*
Charleene Lightsey Jones, B.S., *Assistant, Circulation*
Patricia McNey Baumann, *Assistant, Law Library*
Margaret Laramy Meaker, A.M., B.S. in L.S., *Assistant, Circulation*
Mary Karin Ericson, *Assistant, Hospital Library*
Grace Osterhus, *Assistant, Periodical Room*
Edith Sewall Phillips, A.B., *Assistant, Cataloguing*
Joan Spofford Hulfish, *Assistant, Cataloguing*
DeElma Clare Smith, A.B., *Assistant, Reserve Book Reading Room*

OFFICE OF UNIVERSITY DEVELOPMENT

Office of the Assistant to the President

Fiona Isobel Niedermair, *Secretary in the Office of University Development*

Educational Counseling Office

Timothy Edward Smith, A.M., *Educational Counselor*
Helen Seegar Stone, Ph.D., *Educational Counselor*
Loel Marston Millar, B.F.A., *Secretary*

Public Relations Office

Margaret Davis, A.M., *Associate Director of Public Relations*
Donald Bruce Callander, *Staff Writer*
Lucy Jane Pope, A.B., *Staff Writer*
John Samuel Toomey, A.B., *Assistant to the Director of Public Relations*
Edward Carroll Hall, *Public Relations Assistant*
Mignon Rogers, *Secretary*

Alumni Relations Office

Warren Gould, A.M., *Director of Alumni Relations*
Mary Dow, A.B., *Assistant to the Director*

Lillemor Spitzer Crehore, B.S., *Records Clerk*
Mary Feeney, *Secretary*

OFFICE OF THE PATENT, TRADE-MARK, AND COPYRIGHT FOUNDATION

Louis James Harris, A.B., LL.B., S.J.D., LL.M., *Associate Director*
Barbara Jean West, A.B., *Secretary*

STUDENT ACTIVITIES

Jean Buckley, A.M., *Assistant to the Director of Activities for Women*
Nina Romani, A.B., *Secretary, Office of the Director of Activities for Women*
Evelyn Jane Staver Neira, *Secretary to the Director of Activities for Men*
Edward Ferero, A.B., *Housing Assistant in the Office of the Director of Activities for Men*
Mary Jane Rosenberger, A.B., *Student Activities Assistant*

Intercollegiate Athletics

Robert Faris, B.S., *Graduate Manager of Athletics*
William Jennings Reinhart, B.B.A., *Head Baseball and Head Basketball Coach*
Eugene Hughy Sherman, Sr., B.S., *Head Football Coach*
Raymond George Hanken, B.S. in P.E., A.M. in Ed., *Assistant Football Coach*
James Joseph Feula, B.S., *Assistant Football Coach*
James Shreve, *Assistant Football Coach*
Harry Ledford, *Athletic Trainer*
Joyce Louise Freedman, *Secretary in the Office of Men's Athletics*

Musical Activities

Robert Howe Harmon, A.B., M.D., *Director of the Glee Clubs*
Grace Ruble Harmon, *Associate Director of the Glee Clubs*

VETERANS EDUCATION

Virginia Mae Sherard, A.M., *Assistant Director of Veterans Education*
Janet Wildman Johnson, A.M., *Assistant to the Director of Veterans Education*
Denny Lamb Thompson, A.B., *Receptionist and Chief Clerk*

RESIDENCE AND SORORITY HALLS

Zoa Van Winkle, B.S., *Hostess, Hattie M. Strong Residence Hall for Women*

Virginia Randolph Kirkbride, A.M., *Hostess, Sorority Hall, 2129 G Street*

THE UNIVERSITY

HISTORY AND ORGANIZATION

HISTORY

The idea of a university located in the Capital of the Nation was sponsored by George Washington, who during his public life urged the establishment of such an institution and who in his will left fifty shares of stock in the Potomac (Canal) Company for the endowment of a university to be established in the District of Columbia "to which the youth of fortune and talents from all parts thereof might be sent for the completion of their Education in all branches of polite literature;—in arts and Sciences,—in acquiring knowledge in the principles of Politics & good Government."

It was George Washington's hope that the "General Government" would extend toward such an institution "a fostering hand". No steps were taken by Congress to carry out the provision of Washington's will, and the stock that he had bequeathed for the establishment of a university in the District of Columbia became valueless owing to the failure of the Potomac Canal properties.

Meanwhile, however, a movement was started by private persons under the leadership of Luther Rice to establish an institution of higher learning at the seat of the National Government for the education of the Baptist ministry and to afford general collegiate training. In 1819 an association was formed by Luther Rice, Obadiah B. Brown, Spencer H. Cone, and Enoch Reynolds for the purpose of raising funds to buy land for the use of the college.

A group of the Nation's leaders who were especially interested in Washington's idea became patrons of the college and contributed to funds raised for the purchase of land and erection of buildings. Among them were James Monroe, President of the United States; William H. Crawford, Secretary of the Treasury; John C. Calhoun, Secretary of War; William Wirt, Attorney General; Return J. Meigs, Postmaster General; and thirty-two members of Congress.

Legally to implement the college a petition was made to Congress for the incorporation of "the General Convention of the Baptist Denomination in the District of Columbia for evangelical and literary purposes". This petition was denied by Congress, on April 26, 1820, because of its sectarian character.

Failing to obtain a denominational charter, members of the association enlarged their objective to embrace national aims, and with the sponsorship of Government leaders there was presented in Congress a bill for the incorporation of "the Columbian Society for literary pur-

poses", it being proposed to realize in this way "the aspirations of Washington, Jefferson and Madison for the erection of a university at the seat of the federal government."

Acting upon this second petition, on February 9, 1821, Congress chartered Columbian College in the District of Columbia, inserting in the charter by special action the provision "That persons of every religious denomination shall be capable of being elected Trustees; nor shall any person, either as President, Professor, Tutor or pupil, be refused admittance into said College or denied any of the privileges, immunities or advantages thereof, for or on account of his sentiments in matters of religion".

Thus Columbian College in the District of Columbia was chartered by Congress as one of the early nonsectarian institutions of higher learning in the United States, under the distinguished favor of President James Monroe and members of his Cabinet.

A tract of approximately forty-seven acres, extending about one-half mile northwest of Boundary Street (Florida Avenue) between Fourteenth and Fifteenth Streets, was purchased and by 1822 the main building was completed sufficiently to use.

Two years later, when the first Commencement was held on December 15, 1824, Congress and the Supreme Court adjourned their sessions to enable their members to attend the exercises. President Monroe, John Quincy Adams, John C. Calhoun, Henry Clay, and the Marquis de Lafayette headed the eminent company in attendance.

By an act of Congress of March 3, 1873, the name of the college was changed to "Columbian University", in recognition of the enlarged scope of the institution. In 1884 the University was moved from its first location on "College Hill", now Columbia Heights, to the new University Hall built for it at Fifteenth and H Streets. Near-by buildings accommodated the School of Medicine and somewhat later, the Law School.

For a period of six years, from 1898 to 1904, the University was placed under control of the Baptist Denomination. In 1904 an act restoring the original secular character of the University and authorizing change of name to The George Washington University was passed by Congress.

Subsequently all colleges, schools, and divisions of the University except the School of Medicine were brought together in the area bounded by Nineteenth, Twenty-third, and G Streets, and Pennsylvania Avenue NW. The School of Medicine is situated on H Street between Thirteenth and Fourteenth Streets NW.

The endowment of the University is $4,000,000.

In 1930 a new plan of academic organization for the liberal arts work was effected in the establishment of the Junior College and the redefining of graduate work, as indicated below.

THE COLLEGES, SCHOOLS, AND DIVISIONS

The George Washington University includes fourteen colleges, schools, and divisions, as follows:

The Junior College offers the work of the first two years of the four-year college program in the liberal arts and sciences and two years of preprofessional work. Each of these curricula leads to the degree of Associate in Arts. It also offers two-year terminal curricula. Those in Accounting and Secretarial Studies lead to the degree of Associate in Arts; those in Home Economics, Medical Technology—Basic Course, and Physical Science lead to the degree of Associate in Science.

Columbian College offers the work of the junior and senior years of the four-year college program in the liberal arts and sciences leading to the degree of Bachelor of Arts and Bachelor of Science. It also offers the studies leading to the degrees of Master of Arts and Master of Science in the fields of liberal arts and sciences.

The Graduate Council offers a program of advanced study and research leading to the degree of Doctor of Philosophy.

The School of Medicine offers work leading to the degree of Doctor of Medicine.

The Law School offers professional and graduate courses leading to the degrees of Bachelor of Laws, Juris Doctor, Master of Laws, Master of Comparative Law, and Doctor of Juridical Science.

The School of Engineering offers courses leading to the degrees of Bachelor of Civil Engineering, Bachelor of Electrical Engineering, Bachelor of Mechanical Engineering, Bachelor of Science in Engineering, Master of Science in Engineering, and Master of Engineering Administration. It also directs work leading to the professional degrees in the fields of civil, electrical, and mechanical engineering.

The School of Pharmacy offers courses leading to the degrees of Bachelor of Science in Pharmacy and Master of Science in Pharmacy.

The School of Education offers undergraduate programs leading to the degrees of Bachelor of Arts in Education, Bachelor of Science in Home Economics, and Bachelor of Science in Physical Education, and graduate studies leading to the degrees of Master of Arts in Education and Doctor of Education.

The School of Government offers undergraduate programs of study in Foreign Affairs, Accounting, Business Administration, and Statistics, leading to the degree of Bachelor of Arts in Government. Graduate work is offered leading to the following degrees: Master of Arts in Government in the fields of Foreign Affairs, Economic Policy, Accounting, Business and Economic Statistics, and Counseling; Master of Arts in Public Administration; Master of Arts in Personnel Administration;

Master of Business Administration; and Doctor of Business Administration.

The College of General Studies supplements the adult education program of the University through its Off-Campus Division, Campus Division, and Division of Community Services.

The Division of University Students makes available courses for mature students, not candidates for degrees in this University.

The Division of Special Students makes available courses for students in the process of qualifying for degree candidacy.

The Division of Air Science offers a program of Air Force ROTC training which is integrated with the curricula of the colleges and schools of the University and leads to appointment as a commissioned officer in the United States Air Force Reserve.

The Summer Sessions.

Instructional Divisions

The instructional divisions, established at The George Washington University in 1930, are organized on the basis of the relationship of course content, interrelation of methods and prerequisites, and similarity of background and viewpoint. Originally there were four divisions, Languages and Literatures, Mathematics and Physical Sciences, Natural Sciences, and Social Sciences. The plan is being restudied and a provisional alignment has been made which adds two new divisions, Applied Sciences and Medical Sciences.

ACADEMIC STATUS

The George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools. This is important to students who wish to transfer credits from one institution to another.

The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board.

The Law School is a charter member of the Association of American Law Schools and is approved by the Section of Legal Education and Admissions to the Bar of the American Bar Association. The School of Medicine is a member of the Association of American Medical Colleges and is one of the medical colleges which have been continuously approved by the American Medical Association. The School of Pharmacy is accredited by the American Council on Pharmaceutical Education as a class "A" school. It is a member of the American Association of Colleges of Pharmacy. The School of Engineering is on the accredited list

of the Engineers' Council for Professional Development. The School of Education is a charter member of the American Association of Colleges for Teacher Education.

LOCATION

The George Washington University is in downtown Washington four blocks west of the White House and east of the Potomac River with its extensive parkway. Readily accessible to the University are many of the departments of the Government, including the Department of State, the Department of the Treasury, the Department of Justice, the Department of the Army, the Department of the Navy, the Department of the Interior, the Department of Agriculture, the Department of Commerce, and the Department of Labor, as well as the National Archives, the Capitol, the Library of Congress, the National Academy of Sciences, the Pan American Union, the National Gallery of Art, and the Corcoran Gallery of Art.

GOVERNMENT

The government and general educational management of The George Washington University are vested in a self-perpetuating Board of Trustees, with the President of the University as a member ex officio. The members of the Board are named for a period of three years and are divided into three classes. The members of one class are elected at each annual meeting to fill the places of the members whose terms of office expire. Two members of each class are nominated by the Alumni Association.

EDUCATIONAL FACILITIES

BUILDINGS

Buildings, grounds, and equipment are valued at approximately $19,000,000.

The buildings of the Junior College, Columbian College, the Graduate Council, the Law School, the School of Engineering, the School of Pharmacy, the School of Education, the School of Government, the College of General Studies, the Division of University Students, the Division of Special Students, the Division of Air Science, the University Hospital and Outpatient Department, and the Cancer Clinic are located between Nineteenth and Twenty-fourth Streets and between Pennsylvania Avenue and G Street NW. The School of Medicine is at Fourteenth and H Streets NW. The buildings of the University are as follows:

Chapin Hall, 2128 H Street (rear). Named in honor of the late Stephen Chapin, President of the University from 1828 to 1841. Offices and classrooms of the Air Force ROTC.

Corcoran Hall, 725 Twenty-first Street. Named in honor of the late William W. Corcoran, benefactor of the University and a former member of the Board of Trustees. Offices of the Treasurer, the departments of Chemistry and Physics; Chemistry Research Project; the chemistry and physics laboratories; classrooms.

Davis-Hodgkins House, 731 Twenty-second Street. Offices and lounges of engineering students' organizations.

Draper Hall, 2201 G Street.

Everglades Apartments, 2223 H Street, a residence hall for nurses.

Faculty Club House, 714 Twenty-first Street.

Gymnasium, 2019–21 H Street

Hall of Government, 710 Twenty-first Street. The gift of the late Mrs. Henry Alvah Strong, former Trustee of the University. Offices of the Dean of the School of Government, the departments of Accounting, Business Administration, Economics, History, Political Science, and Statistics; Offices of the Air Force Advanced Management Course, Military Economics and Politics Program, and Navy Graduate Controllership Program; classrooms.

Harlan-Brewer House, 1923 H Street. Offices of law student organizations, lounges, reading rooms.

Hospital House Staff Residence, 818 Twenty-second Street.

Hospital and Outpatient Department, Washington Circle.

International House, 2119 G Street. Office of the Adviser to Students from Foreign Countries; club rooms.

Lisner Auditorium, 730 Twenty-first Street. The gift of the late Abram Lisner, former Trustee of the University. The Auditorium; Lisner Lounge; offices and classrooms of the Department of Speech, and the housing officer.

Mechanical Engineering Building, 735 Twenty-first Street.

James Monroe Hall, 2115 G Street. Offices of the Dean of the Junior College, the Dean of Columbian College, the Dean of the Division of University Students, the Dean of the School of Education, and the Director of the Air Force Resources Management Training Program; the departments of Education, Eng-

lish (English and American Literature), Germanic Languages, Journalism, Mathematics, Philosophy, Psychology, Secretarial Studies, and Slavic Languages; classrooms.

Office of the President, 2003 G Street. Offices of the President, Dean of Faculties, and Administrative Secretary.

Placement Office, 2114 G Street.

School of Medicine, 1335–1339 H Street. Offices of the Dean and Staff of the School of Medicine; the Medical Library; laboratories; lecture rooms; research laboratories; student and faculty lounges; and University Medical Bookstore.

Sorority Halls:

2129 G Street. Apartments of Pi Beta Phi, Chi Omega, Sigma Kappa, Alpha Delta Pi, Delta Zeta, Zeta Tau Alpha, and Kappa Kappa Gamma sororities.

2131 G Street. Apartment of Delta Gamma Sorority.

802 Twenty-first Street. Apartment of Phi Sigma Sigma sorority.

2112 G Street. Apartments of Kappa Alpha Theta and Kappa Delta sororities.

Staughton Hall, 707 Twenty-second Street. Named in honor of the late William Staughton, President of the University from 1821 to 1827. Offices and laboratories of the Navy Logistics Research Project and office of the Coordinator of Scientific Activities.

Stockton Hall, 720 Twentieth Street. Named in honor of the late Rear Admiral Charles Herbert Stockton, President of the University from 1910 to 1918. Offices, library, and lecture halls of the Law School.

Strong Residence Hall for Women, 620 Twenty-first Street. Named in honor of the donor, the late Mrs. Henry Alvah Strong, former Trustee of the University.

Student Union, 2125 G Street. Offices of student organizations, student cafeteria and snack bar, reading room, lounge, game and music room, and the "Lost and Found" Office.

Tompkins Hall of Engineering, 725 Twenty-third Street. The gift of Charles H. Tompkins, Trustee of the University. Offices of the Dean of the School of Engineering; the departments of Civil, Electrical, and Mechanical Engineering; Fluid Dynamics Research Project. Engineering testing laboratories, general laboratories, drafting rooms, and classrooms.

University Book Store, 2120 H Street. University Medical Bookstore, 1335 H Street.

University Library, 2023 G Street. The gift of the late Abram Lisner, former Trustee of the University. The library, rooms of the Board of Trustees, and the Graduate Council.

The Helen L. and Mary E. Warwick Memorial Building, 2300 K Street. Diagnostic and treatment rooms, and research laboratories of the George Washington University Cancer Clinic.

Welling Hall, 814 Twenty-second Street. Residence hall for men. Named in honor of the late James Clarke Welling, President of the University from 1871 to 1894.

Woodhull House, 2033 G Street. Gift of the late General Maxwell Van Zandt Woodhull, former Trustee of the University. Office of the Director of Activities for Women; meeting rooms for student and alumni activities; office of the Educational Counselor.

Building A, 2026 G Street. Offices of the Department of Romance Languages.

Building B, 2024 G Street. Offices, laboratories, and classrooms of the Department of Home Economics.

Building C, 2029 G Street. Offices of the Registrar and the Director of Admissions; offices and laboratories of the departments of Biology, Botany, and Zoology; classrooms.

Building D, 2013 G Street. Office of the Business Manager; Human Resources Research Office.

Building F, 706 Twentieth Street. Offices of the Dean of the College of General Studies; Director of the Institute of Correctional Administration.
Building G, 712 Twentieth Street. Offices of the Department of English (Composition section).
Building H, 714–16 Twentieth Street. Offices and locker rooms of the Department of Physical Education for Women.
Building I, 2135 G Street. Offices, classrooms, and laboratories of the Department of Geography; offices of the Historical Records Research Project.
Buildings J and L, 2131 and 2129 G Street (rear). Classrooms and locker rooms of the Department of Physical Education for Women.
Buildings M and N, 716–18 Twenty-first Street.
Building O, 2106 G Street. Office of the Department of Religion.
Building P, 2128 G Street. Offices of the Student Health Service and the Dean of the Division of Special Students.
Building Q, 2029 H Street. Office of the Director of Veterans Education and the Director of Activities for Men.
Building R, 2027 H Street. Offices of the Graduate Manager of Athletics, the Department of Physical Education for Men, and the Athletic Staff.
Building S, 2025 H Street. Offices of the Assistant to the President and Public Relations.
Building T, 2110 G Street. Offices of the Dean of the Summer Sessions and the Department of Art; International House (see International House).
Building U, 2018 I Street. Offices of the Army Logistics Project.
Building V, 2114 H Street. Laboratories and classrooms of the Department of Physics.
Building W, 2128 H Street. Offices of the School of Pharmacy; pharmacy laboratories; classrooms.
Building X, 708 Twenty-second Street. Offices of Alumni Relations.
Building Y, 802 Twenty-first Street. Offices, classrooms, and laboratories of the Reading Clinic.

LIBRARY FACILITIES

The Library collections of The George Washington University are housed in the University Library in Lisner Hall, the general library of the University; and in the departmental libraries of law, in Stockton Hall, and medicine, in the School of Medicine.

These collections contain approximately 300,000 volumes—237,000 in the University Library, 48,700 in the Law Library, and 14,300 in the Medical Library. Approximately 10,000 volumes a year are added to the library's resources. Endowments, supplementing the University appropriation, provide books in the fields of American civilization, American literature, foreign service, history, and public finance, and gifts from many sources have enriched the collections. The Libraries currently receive 1,500 periodicals.

In the modern University Library building, erected in 1939, on the first three floors are the delivery hall, card catalogue, reference and main reading rooms, periodical room, and reserve book rooms; on the fourth floor are ten planned seminar rooms; and on the fifth floor is the Graduate Council reading room for doctoral candidates. To the original 135,-

000 volume eight-tier stack of modern steel construction has been added a similar unit of 170,000 volume capacity with 50 study carrels.

Of the special subject collections in the University Libraries, the most recent acquisition is the internationally known library of the Carnegie Endowment for International Peace, which was assembled during forty years of its activity in Washington, and was purchased by the University. The collection contains 50,000 bound volumes and 20,000 pamphlets in the fields of international law and relations, history, and economics. Other collections in the Library are the W. Lloyd Wright collection of Washingtoniana, acquired in 1950; the Richard Heinzel Collection of Germanic philology and literature; the Curt Wachsmuth Collection of Greek and Roman literature, archaeology, and history; the Mount Vernon Collection on political history, international law, and the social sciences; a representative collection of Spanish American books, the gift of the governments of Hispanic America; and the Chauncey Mitchell Depew Public Speaking Collection.

Information concerning the use of the Libraries may be obtained at the library service desks. A classified list on cards of selected recent acquisitions is available at frequent intervals, in addition to the complete information in the card catalogue. Monthly art exhibitions are held on the first and second floors of the University Library during the academic year.

The hours of the University Library and the Law Library are Monday through Friday, 9:00 A.M. to 10:00 P.M.; Saturday, 9:00 A.M. to 5:00 P.M.; Sunday, 2:00 to 6:00 P.M. The Medical Library is open Monday through Friday, 9:00 A.M. to 10:00 P.M.; Saturday, 9:00 A.M to 5:00 P.M.

The Library is administered for the curricular, reference, and recreational needs and interests of the students. Instruction in the use of the library is given in the required English courses, and by the reference librarians. The Library endeavors to assist students and all members of the University to use the rich library resources of Washington and the unusual opportunities they offer for extensive research. Inter-library loan arrangements are maintained with other libraries in the city and in the United States.

The student has access to the Library of Congress, the Public Library of the District of Columbia and its branches, the library of the Pan American Union, the Library of the Bureau of Railway Economics, the Library of the United States Department of Agriculture, the Library of the United States Office of Education, the Armed Forces Medical Library, the Library of the Smithsonian Institution, and many of the other great special collections of the government departments.

ADMISSION

All colleges, schools, and divisions of the University accept men and women.

Students may enter any college, school, or division of the University, except the School of Medicine, at the beginning of either semester or any of the Summer Sessions.

Entrance to the School of Medicine in 1956–57 is permitted only at the opening of the semester beginning September 1956.

GENERAL ADMISSION REQUIREMENTS

The following factors are considered in determining the eligibility of an applicant for admission:

1. The adequacy of previous academic work as preparation for the course of study now contemplated—including quantity and quality of work and the standing of the institution in which it was done.
2. Results of specified tests, when prescribed by the Committee on Admissions.
3. The aptitude of the student for the course contemplated.
4. The character of the student.

The University reserves the right to refuse admission to any student who has a previous academic record of such grade as to create doubt of his ability to pursue college work successfully, or who for any other reason would not be a desirable student.

APPLICATION FOR ADMISSION

An applicant for admission must obtain from the Office of the Director of Admissions an application blank which he must fill out completely and return with the application fee of $3 ($10 for the School of Medicine). A recent photograph, with signature, of the applicant must be attached to the blank.

Applications should be filed not later than July 1 for the fall semester, January 1 for the spring semester, and May 1 for the Summer Sessions.

An applicant from a secondary school must send the high school record form provided by the University to his high school principal with the request that the principal fill out the form and mail it *directly* to the Office of the Director of Admissions.

An applicant who has previously attended an institution of higher learning must request the registrar of that institution to mail directly to the Office of the Director of Admissions a transcript of his record. If he has attended more than one such institution he must request the regis-

trar of each institution to send to the Office of the Director of Admissions a transcript of his record, *even though credits were not earned*, together with an honorable dismissal from the institution last attended.

The Graduate Record Examination administered by the Educational Testing Service, Princeton, New Jersey, is accepted as supplemental evidence of the applicant's educational attainment, and the appropriate report should accompany the application for admission whenever available.

METHODS OF ADMISSION

From Secondary Schools

An applicant from a secondary school may seek to qualify for admission by certificate or examination.

By Certificate

A certificate of graduation with a minimum of fifteen "units"* from an accredited secondary school and the recommendation from the principal of the secondary school that the applicant is prepared to undertake college work will be considered subject to the following conditions:

1. If the school is accredited by the regional accrediting association, the student must rank not lower than the fourth fifth of his class.

2. If the school is not listed by the regional accrediting association, but has been accredited by the state accrediting agency, the student must rank in the upper three fifths of his class.

By College Entrance Board Examinations

An applicant may qualify by passing satisfactorily College Entrance Board examinations as prescribed by the Director of Admissions. These examinations are given at a large number of examination centers throughout the United States, including Washington, D. C., on May 19, August 8, and December 1, 1956; and January 12, March 16, May 18, and August 14, 1957.

Arrangements for the examinations should be made with the College Entrance Examination Board, Post Office Box 592, Princeton, N. J., not less than one month before the date of the examinations.

From Higher Institutions†

An applicant for advanced standing may be considered for admission upon the presentation of satisfactory credentials from an accredited

* A unit represents a year's study in a secondary school subject, including in the aggregate not less than 120 sixty-minute periods of prepared classroom work.

† The University reserves the right to refuse advance credit in whole or in part, or to allow it provisionally. Credit so given may be withdrawn for subsequent poor work.

institution of higher learning. The student must be in good standing as to scholarship and conduct, and must be eligible to return to the previously attended institution in the semester for which he seeks admission to this University.

If the transcript of record from such an institution includes the record of his secondary school work, it is not necessary for the applicant to have forwarded a separate record directly from the principal of the secondary school. High school work is considered only as fulfilling entrance requirements; it is never credited toward advanced standing.

Properly certified courses taken at accredited colleges or universities may be applied toward a degree at this University, subject to the curriculum requirements and regulations of the school or college to which admission is sought. Work of low pass grade (such as *D* or the equivalent) will not be considered for transfer.

ENTRANCE REQUIREMENTS*

The Junior College

An acceptable certificate of graduation from an accredited secondary school, or the satisfactory passing of College Entrance Board examinations selected with the approval of the Director of Admissions, is required. (See "Methods of Admissions".)

Distribution of Units for All Curricula.—Certification by the principal that the student has satisfied all curriculum requirements of the school will be accepted in lieu of any prescribed distribution of units. Attention is called, however, to the necessity of completing stated prerequisite studies during the secondary school period for admission to certain curricula. It is to be noted that one unit of algebra is prerequisite to courses in chemistry, mathematics, physics, and statistics, and that in addition one unit of plane geometry is prerequisite to courses in mathematics and physics. In the instance of applicants who do not meet the above stated mathematics requirements, algebra and plane geometry may be taken without college credit when offered by the Department of Mathematics. For a statement of the foreign language requirements see page 65.

A desirable secondary school program in preparation for college would include: four years of English, four years of foreign language (preferably one language rather than two), two years of natural or physical science with laboratory instruction (over and beyond the so-called "General Sciences"), two or three years of social studies (with concentration on history), one or two years of basic mathematics.

* Entrance requirements are established by the faculties of the several colleges, schools, and divisions. The Director of Admissions, as agent for the faculties, administers regulations governing admission, readmission, and transfer.

Columbian College (the Senior College)

For the Bachelor's Degrees

Two years of Junior College work leading to the degree of Associate in Arts, or the lower-division work in institutions not organized on the junior-senior-college plan, following a specified curriculum, meet the minimum requirements of Columbian College. In addition, however, scholarship requirements for admission may be set somewhat higher than those for graduation from the Junior College.

Bachelor of Arts.—An Associate in Arts degree based on the *Arts and Letters* curriculum in the Junior College, or the equivalent (see page 66), is required.

Bachelor of Science.—An Associate in Arts degree based on the *Science* curriculum in the Junior College, or the equivalent (see page 67), is required.

For the Master's Degrees

An approved Bachelor's degree from an accredited higher institution is required. A student from an unaccredited institution may be admitted at the discretion of the Committee on Admission and Advanced Standing, but he will be required to take such extra work above the minimum requirements as may be prescribed. An appropriate distribution of courses and a superior quality of work in the major field are essential.

Applications for admission must be approved by the department or division and by the Dean.

Master of Arts.—The student's undergraduate curriculum must have included a program of study substantially equivalent to the Bachelor of Arts major in his chosen field at this University.

Master of Science.—The student's undergraduate curriculum must have included the equivalent of the undergraduate major at this University of the scientific department under which he desires to work.

The Graduate Council

Doctor of Philosophy.—The student must possess an adequate academic preparation for advanced study in the proposed field, as evidenced by approved Bachelor's and Master's degrees, or the equivalent, together with acceptable personal qualities and capacity for creative work.

The School of Medicine

Doctor of Medicine.—Ninety semester hours of work, exclusive of physical education, in an accredited higher institution are required, as follows:

1. Chemistry, sixteen semester hours as follows: (*a*) eight semester hours in general inorganic chemistry, of which at least four semester hours are laboratory work (qualitative analysis may be counted as general inorganic chemistry); (*b*) eight semester hours or a one-year college course of organic chemistry, including laboratory work.

2. Physics, eight semester hours, of which at least two semester hours are laboratory work. It is recommended that this course be preceded by one in trigonometry.

3. Biology, eight semester hours, of which at least four semester hours are laboratory work. This requirement may be satisfied by a course of eight semester hours in either general biology or zoology, or by four semester hours each in zoology and botany but not by botany alone.

4. English composition and literature, six semester hours, the usual introductory college course or the equivalent. The student should develop facility in speaking and writing English.

5. Modern foreign language; a reading knowledge, preferably of French or German.

6. Electives. It is recommended that the remaining semester hours required include: comparative vertebrate anatomy, botany, vertebrate embryology, qualitative and quantitative chemical analysis; social science and psychology.

Advanced Standing

A student who has satisfactorily completed one or two years at any other medical school approved by the American Medical Association, and who has the necessary preliminary educational requirements, may be admitted to advanced standing.

The Law School

For the Degrees of Bachelor of Laws and Juris Doctor

Bachelor of Laws.—A Bachelor of Arts or equivalent degree awarded upon completion of a four-year course in an approved college or university is required. All pre-legal work must be of satisfactory quality and distribution. No student will be admitted who has been in attendance at another law school and who is ineligible to return to that school in good standing. From the applicants, a selection will be made by the Committee on Admissions.

Juris Doctor.—A student does not register as a candidate for the degree until his last year in the Law School. For details, see pages 116–17.

ADVANCED STANDING

Advanced standing toward the degree of Bachelor of Laws will be granted only for work successfully completed in other law schools which are members of the Association of American Law Schools. However, credits will not be recognized in excess of those which might be obtained in a similar period in this Law School.

Advanced standing will not be granted for law work already counted toward the Bachelor of Arts or other pre-legal degree.

Advanced standing toward the degree of Juris Doctor will not be granted.

For the Graduate Degrees

*Master of Laws.**—A Bachelor of Arts or equivalent degree from an approved college or university and a Bachelor of Laws or equivalent degree from a member school of the Association of American Law Schools are required. Candidates for admission must have attained a *B* average on all work done for the Bachelor of Laws degree, except that, in the discretion of the Committee on Graduate Studies, applicants otherwise eligible may be admitted on proof of experience and attainment as an alternative. Advanced standing will not be granted for credits earned while a candidate for the first degree in law. Credits earned as an unclassified student will not be applicable toward meeting the requirements of the degree unless specific provision therefor is included in the letter of admission.

Master of Comparative Law and Master of Comparative Law (American Practice).—The following are required: (1) the successful completion of and graduation from a course in arts, philosophy, letters, or sciences, equivalent to graduation from a gymnasium, lycée, or liceo; and (2) graduation in law from a recognized foreign university where training was in Civil Law.

Doctor of Juridical Science.—The following are required: a Bachelor of Arts or equivalent degree from an approved college or university and a Bachelor of Laws or equivalent degree, earned with high rank, from a member school of the Association of American Law Schools, and outstanding capacity for scholarly work in the field of law.

Unclassified Students

A person who is in good standing as a degree candidate in another law school which is a member of the Association of American Law Schools

* Satisfactory completion of one-half the work required for graduation from an accredited college satisfies the pre-legal admission requirement if the applicant served not less than 20 continuous months in the U. S. armed forces during World War II prior to September 1948.

may, at the discretion of the Dean, be admitted as an unclassified student in order to earn credits for transfer to the other law school.

A person who is a member of the bar or a person, not a member of the bar, who is a graduate of a member school of the Association of American Law Schools may, at the discretion of the Dean, be admitted as an unclassified student.

Unclassified students are required to participate in the work of the course and take examinations. Courses taken by unclassified students will not be credited toward degrees at this Law School.

Continuing Legal Education Students

A simplified admission and registration procedure is provided for members of the bar desiring to register as continuing legal education students to take courses on a non-credit basis. Members of the bar desiring to register as degree candidates or as unclassifiated graduate students should file the regular application for admission form.

The School of Engineering

For the Bachelor's Degrees

Bachelor of Civil Engineering, Bachelor of Electrical Engineering, Bachelor of Mechanical Engineering, Bachelor of Science in Engineering.—An acceptable certificate of graduation from an accredited secondary school, or in the satisfactory passing of College Entrance Board examinations in secondary school subjects selected with the approval of the Director of Admissions is required.

Nine and one-half of the fifteen units required for entrance must be distributed as follows: three in English, two in algebra, one in plane geometry, one-half in plane trigonometry, one in physics or chemistry, and two in one foreign language or history. A graduate of an approved high school who does not offer for admission the particular subjects required for the engineering curriculum, but who does present not less than fifteen acceptable units, may be admitted on condition, if such deficiency in the distribution of units does not exceed two units.

ADVANCED STANDING

Advanced standing may be granted for work successfully completed at accredited institutions of higher learning. Credit will be assigned by the School of Engineering to the extent that the work taken at previous institutions meets the requirements for the degree sought at this University, and subject to the general University regulations concerning satisfactory subsequent work.

For the Master's Degrees

Master of Science in Engineering.—A Bachelor's degree in engineering from a recognized institution and evidence of capacity for productive study are required. Admission by examination may be permitted in exceptional cases.

Master of Engineering Administration.—A Bachelor's degree in engineering or science from a recognized institution, the evidence of the preparation and capacity for productive study, and acceptable supervisory or administrative experience are required.

The School of Pharmacy

For the Bachelor's Degree

Bachelor of Science in Pharmacy.—An Associate in Arts degree based on the curriculum in *Pharmacy* in the Junior College (see pages 67–68), or the equivalent is required.

A student who has received a Bachelor's degree from an accredited institution or who has completed work in the general cultural or foundational subjects of the pharmacy curriculum may be admitted to advanced standing. No more than one year of advanced standing will be granted a student from any institution other than an accredited college of pharmacy.

For the Master's Degree

Master of Science in Pharmacy.—A Bachelor of Science degree from an accredited institution is required. A superior record and professional promise are essential.

The School of Education

For the Bachelor's Degrees

Bachelor of Arts in Education, Bachelor of Science in Home Economics, Bachelor of Science in Physical Education.—An Associate in Arts degree based on the *Education, Home Economics,* or *Physical Education* curriculum in the Junior College (see pages 68–70), or the equivalent from another accredited higher institution, or a certificate of graduation from an approved normal school or the equivalent is required. With the exception of Home Economics, applicants must be in possession of personality traits that give promise of success as a teacher.

For the Master's Degree

Master of Arts in Education.—To be admitted to candidacy for the degree of master of Arts in Education the applicant must: (1) hold a

Bachelor's degree from an accredited institution; (2) have an undergraduate quality-point index of 2.50 or above (C + average); (3) have demonstrated a genuine interest in teaching; (4) be in possession of personality traits that give promise of better-than-average success as a teacher.

To be admitted to candidacy in programs designed to prepare for service in guidance and administration two years of successful teaching experience are prerequisite.

For the Advanced Professional Certificate

Advanced Professional Certificate.—The Bachelor of Arts degree in Education or the Bachelor of Science degree in Physical Education from the School of Education, or the equivalent from another institution of higher learning; a Master's degree, from an accredited institution of higher learning, at least two years of successful teaching experience, and a permanent teaching or administrative license are required.

For the Doctor's Degree

Doctor of Education.—The degree of Master of Arts in Education, or the equivalent, and at least three years of satisfactory educational experience are required.

The School of Government

For the Bachelor's Degree

Bachelor of Arts in Government.—An Associate in Arts degree based on the *Foreign Affairs, Accounting, Business Administration,* or *Business and Economic Statistics* curriculum in the Junior College (see pages 70–71), or the equivalent is required.

For the Master's Degrees

A Bachelor's degree from an accredited college or university is required. A student from an unaccredited institution may be admitted at the discretion of the Committee on Admission and Advanced Standing, but will be required to take such extra work above the minimum requirements as may be prescribed.

A student admitted to candidacy must have attained a quality-point index of 3.00 (a *B* average) in his undergraduate major. An applicant whose scholastic average is below 3.00 in his major, or who lacks prerequisite courses, may be referred to the Division of Special Students to make up the deficiency.

Master of Arts in Government.—The applicant's undergraduate pro-

gram must have included prerequisite courses, corresponding to an undergraduate major at this University, for the chosen field of graduate study.

Master of Arts in Public Administration.—An undergraduate major in a social science or equivalent work experience is required.

Master of Arts in Personnel Administration.—An undergraduate major in a social science or education, with the appropriate courses in psychology, is required.

Master of Business Administration.—An acceptable undergraduate major in Business Administration, or the equivalent, is required. Applicants who are deficient in such course work may be admitted and will be required to make up deficiencies over and above the normal Master of Business Administration program.

For the Doctor's Degree

Doctor of Business Administration.—A Master's degree in Business Administration or a related field, or the equivalent, and proficiency in statistics and accounting to the satisfaction of the Committee on Doctoral Studies are required.

The College of General Studies

For information concerning the College of General Studies, see pages 201–3.

The Division of University Students

Students 21 years of age or over who are not interested in working for a degree in this University may be considered for admission to the Division of University Students to take courses for which they have adequate preparation, as evidenced by previous scholastic records.

In special instances, with the permission of the instructor, a person may be considered for admission as an auditor in a class without being required to take active part in the exercises or to pass examinations, but no credit will be allowed for such attendance.

The Division of Special Students

This is a non degree-granting division of the University in which the Director of Admissions may authorize the placement of students in the process of making up entrance deficiencies to degree-granting colleges and schools of the University.

Complete credentials must be submitted and evaluated before a tentative or definite plan of make-up may be prepared.

The Division of Air Science

The applicant must be a regularly enrolled, full-time, student; at least fourteen years of age; a citizen of the United States; physically fit; of good character; and a candidate for a Bachelor's degree.

CLASSIFICATION OF STUDENTS

Regular Students.—Regular students are those who have met the entrance requirements for candidacy and are registered for degrees.

University Students.—Persons of mature age not seeking degrees, as specified in the rules of the Division of University Students, may be admitted to this Division to pursue courses for which they have had adequate preparation.

Special Students.—Special students are those who are in the process of qualifying for admission to curricula in degree-granting colleges and schools of this University.

Unclassified Students and Continuing Legal Education Students.—For a definition of Unclassified Students and Continuing Legal Education Students in the Law School, see page 130.

Additional information concerning curricula, courses offered, entrance requirements, or admission procedure may be obtained from the Office of the Director of Admissions.

REGISTRATION

Before a student may be admitted to registration he must have satisfied the Office of the Director of Admissions that he is qualified to enter the University (see "Admission", pages 21–22).

A student who has previously matriculated in the University, but who has not been in attendance during the semester prior to registration, should file an application for readmission in advance of registration.

Registration is for the semester unless otherwise indicated on the registration paper. No registration is accepted for less than a semester or one summer session.

A student may not register concurrently in The George Washington University and another institution without the permission of the dean of the college, school, or division in which he is registered in The George Washington University. Allowance of credit for work done concurrently will be at the discretion of the appropriate Committee on Admission and Advanced Standing.

Time and Place of Registration

Registration for all colleges, schools, and divisions except as noted below is conducted in Building C, 2029 G Street NW., between 9:00 A.M. and 7:00 P.M., during the following periods: *fall semester*, September 20 and 21; *spring semester*, January 31 and February 1.

For the Law School: Stockton Hall, 720 Twentieth Street NW., between 9:00 A.M. and 7:00 P.M.: *fall semester*, September 20 and 21; *spring semester*, January 31 and February 1.

For the School of Medicine: School of Medicine, 1335 H Street NW., between 9:00 A.M. and 4:00 P.M., September 13 and 14.

For the College of General Studies: at times and places designated in individual course announcements.

Registration Changes and Withdrawals

For regulations governing changes in registrations and withdrawals, see pages 25, 26–27, 48–49.

FEES AND FINANCIAL REGULATIONS

By authorization of the Board of Trustees, the following fees have been adopted, effective September 1, 1956:

Tuition Fees

For each semester hour* for which the student registers (except for work in the Law School, for courses in Departments of Instruction in the School of Engineering, for courses in the College of General Studies, for work toward a Master's degree in Engineering, and for work taken by a candidate for a Doctor's degree)	$17.00
For each semester hour for which the student registers in the Law School	19.00
For each semester hour for which the student registers for courses in Departments of Instruction in the School of Engineering	18.00
For the degree of Doctor of Medicine, for two semesters†	900.00
For the degree of Doctor of Philosophy, Doctor of Education, or Doctor of Business Administration:	
For work ‡ leading to and including the Council Fellowship or General examination§	510.00
For work leading to and including the final examination§	510.00
For the degree of Doctor of Juridical Science:	
For work leading to and including the final examination§	510.00
For the degree of Master of Engineering Administration:	
For work leading to and including the Comprehensive Problem and Comprehensive Examination§	600.00
For the degree of Master of Science in Engineering:	
For work leading to and including the Comprehensive Examination§	650.00

Additional Course Fees

In certain courses additional fees, such as laboratory and material fees, are charged as indicated in the course descriptions. These fees are charged by the semester and, unless otherwise indicated, may be defrayed in three payments when the tuition is paid in this manner. Breakage of apparatus is charged against the individual student. When breakage is in excess of the normal amount provided for in the laboratory fee the individual student will be required to pay such additional charges as are determined by the department concerned.

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* Payment of tuition for a Master's thesis entitles the candidate, during the academic year of registration, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a theses is unfinished, an additional successive academic year may be granted without further tuition payment. If the preparation of the thesis extends beyond the second academic year, it must be registered for again, and tuition paid on the same basis as for a repeated course.

† Registration in the School of Medicine is for a period of two semesters. After the student has entered the course of instruction he is obligated for the full tuition for two semesters. No part of the tuition will be refunded upon withdrawal or dismissal for any cause.

‡ This fee does not cover the cost of tuition for elementary courses (numbered 1 to 100).

§ When a limited schedule is carried which extends the time of completion of the program of study to more than one year, the proportionate part of the charge may be fixed by the Treasurer.

GRADUATION FEES

Wherein the degree of Associate in Arts or Associate in Science is granted	$10.00
Wherein a degree other than the Associate in Arts or Associate in Science degree is granted	25.00
Wherein an Advanced Professional Certificate in Education is granted	25.00
FEE FOR BINDING MASTER'S THESIS	6.00
FEE FOR THE PROFESSIONAL DEGREE IN THE SCHOOL OF ENGINEERING. An annual fee, one half payable in advance at the time of each registration.	85.00
FEE FOR PRINTING SUMMARY OF DOCTORAL DISSERTATION	85.00

SPECIAL FEES

Application fee, charged each applicant for admission (except applicants to the School of Medicine), non-refundable	3.00
Application fee, charged each applicant for admission to the School of Medicine, non-refundable	10.00
Scholastic-aptitude Test (when required for admission)	3.00
Graduate Record Examination fee (to cover two examinations), charged each candidate for a Bachelor's degree in Columbian College, the School of Engineering, or the School of Government at the time of registration for the final semester of study (excluding summer sessions)	5.00
Late-registration fee, charged each student who fails to register within the designated period	5.00
Change fee, charged each student for each change in program involving one course or more than one course	2.00
Withdrawal fee, charged each student who preregisters and withdraws prior to the regular registration	5.00
Service fee, charged each student for late payment of tuition (see "Payment of Fees")	2.00
Reinstatement fee, charged each student who is reinstated after suspension for delinquency in fees	5.00
Residence fee, charged each student wishing to maintain "in residence" status during any semester of absence from the University or after completion of tuition requirements:	
In the Law School	19.00
In the School of Engineering	18.00
In all other colleges, schools, and divisions	17.00
For special physical examination	2.00
Student Bar Association fee, charged each student in the Law School for each semester or any part thereof except the summer term	3.00
Engineers' Council fee, charged each student in the School of Engineering for each semester or any part thereof except the summer term	1.50
For each examination to qualify for advanced standing and for each special examination	5.00
Laboratory checkout fee, charged each student in chemistry and pharmacy courses who fails to check out of the laboratory by the time set by the instructor	3.00
Transcript fee, charged for each transcript of record after the first	1.00

Registration in the University entitles each student to the following University privileges: (1) the issuance of one certified transcript of record, if and when desired; (2) the services of the Placement Office; (3) the use of University library facilities, except as otherwise designated; (4) gymnasium privileges; (5) admission to all athletic contests, unless otherwise specified; (6) subscription to the *University Hatchet*, the student newspaper; (7) admission to University debates; (8) medical attention and hospital services as described under Health Administration, pages 213–14. These privileges, with the exception of the issuance of transcripts, terminate, and a student is no longer in residence, when he withdraws or is dismissed from the University.

PAYMENT OF FEES

All fees are payable at the Office of the Cashier, 725 Twenty-first Street NW. No student is permitted to complete registration or to attend classes until all fees are paid. Fees for each semester are due and payable in advance at the time of registration.

In exceptional cases, subject to the approval of the Treasurer, the student may sign a contract for semester charges, except for fees payable in advance, permitting payments as follows:

Fall Semester.—One-third at the time of registration; one-third on November 5; one-third on December 3.

Spring Semester.—One-third at the time of registration; one-third on March 4; one-third on April 3.

A student who fails to meet payments when due, but who pays his fees on or before the fifteenth of the month in which payment is due, is charged a service fee of $1. A student who fails to meet payments by the fifteenth of the month in which payment is due will be automatically suspended and may not attend classes until he has been officially reinstated and has paid all accrued fees and a reinstatement fee of $5.

A student suspended for failure to meet payments when due may not be reinstated for the semester after two weeks from the date of suspension. Applications for reinstatement are to be made to the Office of the Cashier.

An auditor pays all fees chargeable to the student registered for credit except the late-registration fee.

WITHDRAWALS AND REFUNDS

Applications for withdrawal from the University or for change in class schedule must be made in person or in writing to the dean of the college, school, or division in which the student is registered. Notification to an instructor is not an acceptable notice (see "Withdrawal", pages 48 and 49).

In authorized withdrawals and changes in schedules, financial adjustments will be made as follows:

Fall Semester.—Withdrawal dated on or before October 31, cancellation of two-thirds of tuition charges; withdrawal dated on or before November 30, cancellation of one-third of tuition charges. No refund or reduction will be allowed on a withdrawal dated subsequent to November 30.

Spring Semester.—Withdrawal dated on or before February 28, cancellation of two-thirds of tuition charges; withdrawal dated on or before March 30, cancellation of one-third of tuition charges. No refund or reduction will be allowed on a withdrawal dated subsequent to March 30.

In no case will a refund be made of the first third of the total tuition charges unless the registration is in advance and is cancelled before the regular registration day. In this case a withdrawal fee of $5 is charged and tuition fees refunded. In no case will tuition be reduced or refunded because of nonattendance upon classes.

Payment applies only to the semester for which a registration charge is incurred and in no case will this payment be credited to another semester.

Any student in chemistry who fails to check out of the laboratory on or before the date set by the instructor, unless excused by the instructor, will be charged a checkout fee in the amount of $3. A student who drops a course before the end of the semester must check out of the laboratory at the next regular laboratory period.

Any student enrolled in the Air Force ROTC who fails to turn in uniforms, equipment, and textbooks, on separation from the Corps, will be charged the value of the missing items.

Authorization to withdraw and certification for work done will not be given a student who has not a clear financial record.

FELLOWSHIPS, SCHOLARSHIPS, PRIZES, FINANCIAL AID

FELLOWSHIPS AND GRADUATE ASSISTANTSHIPS

The following fellowships and graduate assistantships are available. Unless otherwise specified, applications should be submitted not later than April 1 preceding the period for which the award is to be made.

University Teaching Fellowships.—These are assigned for the academic year to the various departments of instruction. The applicant is expected to be a prospective candidate for a Doctoral degree, and to have a Master's degree or equivalent in the general field of his future doctoral study. Each Teaching Fellow receives an annual stipend (on a nine-month basis) of up to $1,350 plus full tuition for whatever schedule of study or research his fellowship duties permit him to carry. Stipends vary with the work load of the individual Teaching Fellow. Normally a University Teaching Fellow renders half-time service in classroom or laboratory assignments to the department of instruction directing his doctoral study. Application should be made to the executive officer of the department of instruction concerned.

Graduate Teaching Assistantships.—These are open in various departments of instruction to candidates for the Master's degrees. Each graduate teaching assistant renders a designated unit of service to his major department of instruction, and receives, depending upon his teaching or laboratory assignment, up to $1,215 on a nine-month basis plus tuition for the program of studies which the duties of his assistantship permit him to carry. Application should be made to the executive officer of the department of instruction concerned.

Law School Research Assistantships.—A limited number of student research assistantships are available each year to students currently enrolled in the Law School, preference being given to applicants who are completing their second year. Each assistant receives an annual stipend. Awards are made on the basis of academic standing, financial need, and capacity for leadership. Research assistants have duties similar to those of teaching fellows. Applications should be submitted to the Dean of the Law School not later than May 1.

Law School Teaching Fellowships.—A limited number of teaching fellowships are available each year in the Law School to prospective candidates for the Master of Laws degree. Each fellow receives an annual stipend, plus tuition for the academic year. Teaching fellows follow an approved program of study and research, assist members of the Faculty in the guidance of first-year students, and supervise student work in legal

bibliography and the drafting of legal instruments. Upon satisfactory completion of the year's work, a fellow is recommended for the degree of Master of Laws. Applications should be submitted to the Dean of the Law School not later than March 1.

Special Fellowships.—Special fellowships are supported by endowment, and are awarded to candidates or prospective candidates for the degree of Doctor of Philosophy of unusual promise and ability. The stipend is not fixed but varies in amount with the need of the individual receiving the award. In applying for one of these fellowships it is advantageous that the student appear personally for an interview with the Chairman and such other members of the Graduate Council as would be interested in the research investigations proposed. These fellowships include the following:

Isabella Osborn King Research Fellowship.—Four fellowships of the value of $1,500 each, offered annually in the general field of biology, and intended to foster research for which the libraries and scientific establishments in Washington provide special facilities.

Robin Miller Fellowship.—A fellowship in medicine in the amount of $1,800, established in 1953 by bequest from Mrs. Robin Miller, is offered for the study of cardiovascular diseases.

Thomas Bradford Sanders Fellowships.—Established in 1928 by Miss Addie Sanders in memory of her brother, Thomas Bradford Sanders, and offered in various academic fields of study.

SCHOLARSHIPS

Scholarships are awarded for the academic year unless otherwise specified and are credited in equal parts for each semester. Each holder must carry a full schedule of academic work (fifteen semester hours or in the professional schools the full prescribed schedule) during the period for which the scholarship is awarded. Applicants* must have established an academic record in courses at this institution, and should apply on prescribed forms which must be filed in the Office of the Chairman of the Committee on Scholarships not later than April 1 preceding the academic year for which the scholarship is to be awarded. Further information may be obtained from the Chairman of the Committee on Scholarships.

Alpha Zeta Omega Scholarship.—This scholarship, in the amount of $500, was established by Pi Chapter of Alpha Zeta Omega Pharma-

* Except in the case of the Alpha Zeta Omega Scholarship, the Alumni Scholarships, the Chi Omega Scholarship, the D. C. Pharmaceutical Association Scholarship, School of Engineering Scholarships, General Motors College Scholarship, the High School Scholarships, the Kappa Alpha Theta Scholarship, the Law School Scholarships, the Eugene and Agnes E. Meyer Scholarships, the National League of Masonic Clubs Scholarship, the John O. Rankin Scholarship, and the Student Activities Scholarships.

ceutical Fraternity. It is awarded annually to a member of the graduating class of one of the public high schools of the District of Columbia and nearby Maryland and Virginia who intends to enroll in the Junior College Pharmacy Curriculum and to continue in the School of Pharmacy, completing the work leading to the degree of Bachelor of Science in Pharmacy.

Alumni Scholarships.—Five scholarships are available each year in the Junior College, upon the recommendation of regional alumni clubs, to outstanding men graduating from accredited high schools. The scholarships cover tuition costs for four semesters (beginning with the fall semester) of full-time work but do not include special fees such as laboratory charges, room, board, or other expenses. To retain the scholarship, the student must maintain a *B* average. Additional information may be obtained from the Director of Alumni Relations.

American Foundation for Pharmaceutical Education Scholarship.—A scholarship fund, in the amount of $400, established by the American Foundation for Pharmaceutical Education, is available annually to junior and senior students of the School of Pharmacy who are in the upper quarter of their class or who are maintaining average grades of not less than *B*. The scholarship funds are awarded on the recommendation of the Committee on Scholarship of the School of Pharmacy.

American Society of Women Accountants.—This scholarship, in the amount of $100, established in 1953 by the District of Columbia Chapter of the American Society of Women Accountants, is available to a sophomore, junior, senior, or postgraduate woman majoring in accounting whose academic record is good and who needs aid in continuing her education.

Byron Andrews Scholarship.—This scholarship in the amount of $300, established in 1920 by Mrs. Belle Fisk Andrews in memory of her husband, Byron Andrews, is available "for ambitious and needy students who desire to pursue courses in English, Latin, journalism, history, literature, or political science".

Anna Bartsch Scholarship.—This scholarship, in the amount of $500, established in 1946 by Dr. Anna Bartsch-Dunne, as a memorial to her mother, Anna Bartsch, is available to a woman in the School of Medicine, "of outstanding scholarship, character, and promise, who intends to make the practice of medicine her life profession". The award is made upon the recommendation of the Faculty of the School of Medicine.

Everett Lamont Bradley Scholarship.—This scholarship, in the amount of $100, established in 1954 by bequest of Alice R. H. Bradley in memory of her son, Everett Lamont Bradley, is available to a student in the School of Medicine.

Emma K. Carr Scholarships.—Six scholarships in the amount of $400

each and ten of $100 each, established in 1932 by Mrs. Emma K. Carr, are available to "young men (of the white race) for undergraduate or postgraduate work, considering character, capacity, and need".

Henry Harding Carter Scholarship.—This scholarship, in the amount of $500, established in 1896 by Mrs. Maria M. Carter in memory of her husband, Henry Harding Carter, is available to a deserving student who is preparing for the civil-engineering profession.

Maria M. Carter Scholarship.—This scholarship, in the amount of $100, established in 1871 by Mrs. Maria M. Carter, is available to a young man.

Chi Omega Alumnae Association Scholarship.—This scholarship, in the amount of $200, established in 1954 by the Washington, D. C., Chi Omega Alumnae Association, is awarded annually to a student who desires to major in speech correction and who is in need of financial assistance in order to complete the prescribed course.

Daughters of the American Revolution Scholarship.—This scholarship, in the amount of $400, established in 1952 by the District of Columbia Daughters of the American Revolution, is available to junior and senior students who are descendants, preferably women, of patriots of the American Revolution.

Isaac Davis Scholaship.—This scholarship, in the amount of $80, was established in 1869 by the Honorable Isaac Davis of Massachusetts. Nominations for the scholarship may be made "by the founder or his eldest lineal descendant". In case no such nomination is made, the scholarship is to be awarded by the University.

District of Columbia Pharmaceutical Association Scholarship.—This scholarship, in the amount of $500, was established in 1954. It is awarded annually to a member of the graduating class of one of the public or parochial high schools of the District of Columbia and near-by Maryland and Virginia who intends to enroll in the Junior College Pharmacy Curriculum and to continue in the School of Pharmacy, completing the work leading to the degree of Bachelor of Science in Pharmacy.

Charles Worthington Dorsey Memorial Scholarship.—This scholarship, established in 1947 as a memorial to Charles Worthington Dorsey, Bachelor of Laws, '81, Master of Laws, '82, is awarded upon the recommendation of the Faculty of the Law School to a needy and promising graduate of Columbian College or other division of the University, with a Bachelor of Arts or other equivalent degree, who has maintained an average of *B* as an undergraduate student and who desires to pursue the study of law as a full-time student. The scholarship covers tuition for the course leading to the first degree from the Law School, Bachelor of Laws or Juris Doctor, provided that the holder maintains an average of *B*. The right is reserved to suspend the benefits of the scholarship for

cause at any time. This scholarship is awarded ordinarily once every three years.

School of Engineering Scholarships.—Four scholarships, established in 1952, are available each year in the School of Engineering to graduates of accredited secondary schools. Each scholarship provides full tuition for one year. The holders of these scholarships must carry a full program in the School of Engineering.

Henry Parsons Erwin Scholarship.—This scholarship, in the amount of $200, established in 1955 by Mrs. Helen B. Erwin as a memorial to her husband, Henry Parsons Erwin, a former Trustee of the University, is available for a student in Engineering.

Robert Farnham Scholarship.—This scholarship, in the amount of $75, given to the University in 1871 by Mrs. Robert Farnham, is available to a student in Columbian College.

General Motors College Scholarship.—This scholarship, established in 1955 by General Motors Corporation, is available for an incoming freshman student who is a citizen of the United States and demonstrates outstanding talent, high personal qualifications, and financial need. The amount of the award has been made flexible and will range from an honorary award of $200, up to an award of $2,000 per year, depending upon the demonstrated need of the individual. It is renewable for the four years of undergraduate work provided the student continues to meet the high standards established for the holder of this award.

Anna Spicker Hampel Scholarship.—This scholarship, in the amount of $40, established in 1949 by Mrs. Evelyn Hampel Young, is available for scholarship aid to young married women students in the School of Education or Columbian College.

Elma Lewis Harvey Scholarship.—This scholarship of $200 was founded in 1921 by Mrs. Emma Elizabeth Harvey in memory of her daughter, and is awarded every four years, or as often as vacant, to a young woman in Columbian College of the Protestant faith and the Caucasian race who shall be selected for scholarship and moral qualifications.

Hazleton Scholarship.—This scholarship, in the amount of $350, established in 1950 by the bequest of Lillie S. Hazleton, is awarded annually "for the use and assistance of needy and worthy students."

High School Scholarships.—The Board of Trustees of the University offers thirty-four scholarships to graduates of public high schools in the Washington Metropolitan Area: sixteen in the District of Columbia area; four each in the Montgomery, Prince Georges, Arlington, and Fairfax areas, and two in the Alexandria city area, the home city of General George Washington. Scholarships are divided equally between men and women.

Each scholarship is awarded annually to a member of the graduating class who plans to enroll in the Junior College for the freshman and sophomore years and thereafter in Columbian College or any one of the professional schools announcing a preprofessional curriculum in the Junior College. The scholar must register the following September and carry each semester a full academic program as prescribed in the Junior College curricula or in the college or school in which he carries his upper division work; in no case is the scholar permitted to carry less than fifteen semester hours.

Each scholarship is a full-tuition scholarship but does not cover special fees. Each scholarship is for four academic years (summer work is not to be included), provided the holder thereof meets all academic and other standards of the University.

To retain a high school scholarship, an average of *B* and a satisfactory standard of deportment must be maintained. In case a student marries after the award is made, the scholarship is forfeited. If for any reason a holder of a high school scholarship resigns or is dropped from said scholarship, the scholarship is terminated.

High School Discussion Conference Scholarships.—Three scholarships are available each year in the Junior College to high school seniors who participate in the George Washington University High School Discussion Program. These scholarships cover tuition for one year, but do not include laboratory fees or other special fees. For information concerning application, consult the Department of Speech.

Kappa Alpha Theta Scholarship.—This scholarship, in the amount of $500, established by the Washington alumnae of Kappa Alpha Theta, is available for the training of a clinician in speech correction.

Kappa Psi Scholarship.—This scholarship, in the amount of $150, was established in 1952 by Gamma Tau Chapter of Kappa Psi Pharmaceutical Fraternity. It is awarded annually to a student in the School of Pharmacy who is in need of financial aid.

Law School Scholarships.—Seven scholarships are available each year in the Law School to graduates of accredited colleges. Each scholarship provides full three-years tuition in the morning division of the Law School. Candidates must have graduated in the upper fifth of their class and must have demonstrated qualities of leadership in addition to scholastic attainment. To retain the scholarship, the successful candidate must maintain a *B* average. Application must be made before March 1 to the Dean of the Law School.

Eugene and Agnes E. Meyer Scholarships.—A scholarship fund, in the amount of $2,500, established in 1952 by the Eugene and Agnes E. Meyer Foundation, is available annually "to assist promising students or appli-

cants in meeting the costs of furthering their education, with preferential consideration to children of persons who are employed in public service, including service in the armed forces or the judiciary."

A. Morehouse Scholarship.—This scholarship was established by Mr. A. Morehouse in 1861. It carries an annual stipend of $125, which is available for an undergraduate "intending to enter the Christian ministry".

The National League of Masonic Clubs Scholarship.—This scholarship, in the amount of $450 annually to be applied toward payment of tuition costs only, is offered by the National League of Masonic Clubs. It is awarded every four years, or as often as vacant, to the son or daughter of a Master Mason who is a member of a Masonic Club affiliated with the National League of Masonic Clubs. To continue to hold this scholarship, the student must maintain a satisfactory academic record.

Newspaper Scholarships.—One scholarship is available each year to a candidate recommended by each of the following newspapers: *The Washington Daily News, The Washington Post and Times Herald,* and *The Evening Star.* The holder of the scholarship must be an employee of the newspaper. These scholarships are valid for four academic years, provided the holder continues in the employ and is recommended by the newspaper, and maintains a satisfactory academic record and a high standard of deportment. They cover tuition but do not include laboratory fees, graduation fees, or other special fees.

Panhellenic Association of Washington, D. C., Scholarships.—A scholarship, in the amount of $200 to be applied to tuition fees, has been established by the Panhellenic Association of Washington, D. C. This scholarship is available annually to a woman student in her sophomore or junior year, who is a member of a National Panhellenic Conference sorority, has done the most to promote good social relations among the sororities on the campus, is an outstanding leader in student affairs sponsored by the University, and has a 3.0 (*B*) or better average.

Paul Pearson Scholarship.—This scholarship, in the amount of $200, established in 1940 by bequest of Paul Pearson and "to be known as the Dr. Paul Pearson award", is available to a student in the School of Pharmacy, upon the recommendation of the Faculty of that School.

John O. Rankin Scholarship.—This scholarship, established in October 1951, in recognition of Mr. Rankin's bequest to the University, is to be awarded to a resident of Pemiscot County, Missouri, upon the recommendation of the Caruthersville Rotary Club and the Hayti Lions Club in this County. The scholarship covers tuition costs for the four-year curriculum in Foreign Affairs, but it does not include laboratory fees.

graduation fees, or other special fees. To retain the scholarship, the recipient must carry a full program and maintain an average of *B*. The scholarship is awarded every four years or as often as vacant. Further information may be obtained from the Office of the President of the University.

Lula M. Shepard Scholarships.—Two scholarships, in the amount of $450 and $300, respectively, established in 1946 by bequest of Lula M. Shepard, are available to "worthy Protestant students desiring to enter the Foreign Service Department of the School of Government".

David Spencer Scholarship.—This scholarship of $175, established in 1918 by Miss Louisa J. Spencer, is available under certain restrictions.

Mary Lowell Stone Scholarship.—This memorial scholarship, in the amount of $200, established in 1893, is available to a woman student of science in Columbian College.

Student Activities Scholarships.—The University has established a limited number of Activities Scholarships for men, which are awarded to approved applicants by the Faculty Committee on Scholarships upon the basis of need, good character, demonstrated aptitude for leadership, and scholarship.

Such scholarships are granted for one academic year. They may be continued, however, upon the basis on which they were granted. Recipients of Activities Scholarships must maintain the required scholastic average of the school or division in which they are registered.

The time for filing applications for Activities Scholarships and the terms of such scholarships may be ascertained by inquiry at the office of the Chairman of the Committee on Scholarships.

Charles Clinton Swisher Scholarships.—These scholarships, in the amount of $400 and $200 respectively, established in 1941 by Professor Charles Clinton Swisher, are available, under certain conditions, to students of medieval history.

William Walker Scholarship.—This scholarship, established in 1824 by William Walker, Esq., carries an annual stipend of $300, which is available for an undergraduate intending to enter the Christian ministry.

John Withington Scholarship.—This scholarship of $150 was established in 1830 by the New York Baptist Theological Seminary.

Ellen Woodhull Scholarship.—This scholarship of $40, established by Ellen M. E. Woodhull, is available to a student in Columbian College.

The Zonta Club of Washington, D. C., Scholarship.—This scholarship, in the amount of $300, offered by the Zonta Club of Washington, D. C., is available to a woman who is a senior or graduate student with special interest in a professional or business career.

The Columbian Women Scholarship Funds

The Columbian Women Scholarships are awarded to women students by the Scholarship Committee of Columbian Women. The awards are based on financial need and scholastic attainment. Applications for these scholarships should be addressed to the Chairman of the Scholarship Committee, Columbian Women, The George Washington University, Washington 6, D. C., not later than May 15 for the Fall Semester, and not later than January 1 for the Spring Semester.

Nellie Maynard Knapp Scholarship Fund.—The income from this fund of $5,000, established in 1915 in memory of a former president, Mrs. Martin A. Knapp, is available for scholarships for women.

Founders of Columbian Women Scholarship Fund.—The income from this fund of $5,000, established in 1920, is available for scholarships.

Lillian Young Herron Scholarship Fund.—The income from this fund of $5,000, established in 1925 and named in 1930 in memory of a former president, is available for scholarships.

Elizabeth V. Brown Scholarship Fund.—This fund of $1,200 was established in 1925 by the College Women's Club of Washington, D. C., in memory of the late Elizabeth V. Brown. The income is available for a scholarship for a woman student in the School of Education.

College Women's Scholarship Fund.—The income from this fund of $500, established in 1926 by the College Women's Club of Washington, D. C., is available for scholarship aid.

Lewes D. and Myrtie H. Wilson Memorial Scholarship Fund.—This fund of $1,000 was established by Miss Elizabeth Wilson in 1926 as a memorial to her parents, Lewes D. and Myrtie H. Wilson. The income is available for a scholarship in the School of Medicine.

Grace Ross Chamberlin Scholarship Fund.—The income from this fund of $2,300, established in 1932 in honor of a former president, is available for scholarship aid.

Janet McWilliam Scholarship Fund.—The income from this fund of $1,000, established in 1954 in honor of a former president, is available for scholarship aid.

PRIZES

Alpha Chi Sigma Prizes.—Alpha Pi Chapter of Alpha Chi Sigma Fraternity offers annually the following prizes:

A "Handbook on Chemistry and Physics" is awarded to each of the three students who carry at least eighteen semester hours during the freshman year and attain the highest averages in freshman chemistry.

The name and year of graduation of the student who has attained the highest quality-point index in courses in chemistry will be inscribed on a bronze plaque. The winner must have had at least sixteen hours of chemistry including the final semester at The George Washington University.

Alpha Delta Pi Prize.—Alpha Pi Chapter of Alpha Delta Pi Fraternity offers an annual prize of $10 to the woman member of the junior class with the most outstanding record in scholarship, extra-curricular activities, and service to the University.

Alpha Kappa Psi Prize.—Beta Mu Chapter of Alpha Kappa Psi Fraternity awards annually a key to the male student who has completed ninety semester hours at The George Washington University and has attained the highest average grade in economics, business administration, public accounting, public finance, and foreign commerce.

Alpha Zeta Omega Prize.—The Ladies' Auxiliary, Pi Chapter, of the Alpha Zeta Omega Pharmaceutical Fraternity offers annually a copy of *The United States Dispensatory* to the freshman student in pharmacy, who has completed at least fifteen semester hours in the University and who has attained the highest average in his courses.

American Institute of Chemists Prize.—The District of Columbia Chapter of the American Institute of Chemists offers an annual prize of a medal and junior membership in the American Institute of Chemists to that graduating student, majoring in chemistry, who excels in scholarship and in the personal qualities of integrity and leadership.

Byrne Thurtell Burns Memorial Prize.—This prize of $65 is awarded to the senior majoring in chemistry who shows the greatest proficiency in organic chemistry, as evidenced by a comprehensive examination, and who possesses such qualifications of mind, character, and personality as to give promise of future achievement.

Martin L. Cannon Memorial Prize.—Pi Chapter of the Alpha Zeta Omega Pharmaceutical Fraternity offers annually a copy of *The United States Dispensatory*, in memory of Dr. Martin L. Cannon, to the student in pharmacy receiving his Associate in Arts degree, who throughout his course has obtained the highest grades and at the same time contributed most to the student activities in the School of Pharmacy.

Chi Omega Prize.—Phi Alpha Chapter of Chi Omega Fraternity offers annually a prize of $25 to be awarded to the woman student in the graduating class with the highest record in the following social sciences: economics, sociology, political science, and history; combined with general excellence.

John Henry Cowles Prizes.—These prizes, founded in 1943 by John H. Cowles, Grand Commander of the Supreme Council of the Thirty-third Degree (Mother Council of the World) of the Ancient and Accepted Scottish Rite of Freemasonry, Southern Jurisdiction of the

United States of America, are awarded annually to the best two scholars in the senior class of the School of Government. The prizes are as follows: first prize, $100; second prize, $50.

DeWitt Clinton Croissant Prize.—This prize of $50, established by the late Professor DeWitt Clinton Croissant, is awarded annually to the undergraduate student who as a member of one of the University courses in drama or as a participant in University dramatics submits to the English Department the best essay on drama or the theatre.

E. K. Cutter Prize.—The E. K. Cutter Prize in English was established by the late Marion Kendall Cutter "for excellence in the study of English." An annual prize of $60 is awarded to the member of the graduating class whose record in English, combined with general excellence, shows most marked aptitude for and attainment in English studies.

Daughters of the American Revolution Prize.—This prize established by the Daughters of the American Revolution of the District of Columbia, consists of $15, which is awarded annually to the student who, having maintained a record of distinction in American history, submits the best essay upon a topic in the period of the American Revolution.

Isaac Davis Prizes.—These prizes, established by the Honorable Isaac Davis, of Massachusetts, in 1847, are awarded annually to such members of the senior class as shall have made the greatest progress in public speaking during their connection with the University. The prizes are as follows: first prize, $25; second prize, $20; third prize, $15.

The award of these three prizes is determined by a public-speaking contest in which the participants deliver original orations. Only members of the senior class who are candidates for the degree of Bachelor of Arts or Bachelor of Science are eligible to compete.

Delta Gamma Prize.—Beta Rho Chapter of Delta Gamma Fraternity offers annually a prize of $10 to the woman member of the freshman class who at the end of that year has the most outstanding record in scholarship, extra-curricular activities, and service to the University.

Delta Zeta Prize.—Delta Zeta Sorority offers annually a prize of $10 to be awarded to the student maintaining the highest average in Zoology 1–2.

Ellsworth Prize.—The Ellsworth Prize of $25, established by the late Mr. Fritz von Briesen, is awarded to the student doing the best work in the subject of Patent Law Practice.

Elton Prize.—The Elton Prize of $30, established by the Reverend Romeo Elton, of Exeter, England, is awarded annually to the senior student having the highest average in the Greek language and literature.

Jesse Frederick Essary Prize in Journalism.—This memorial prize of $200, established in 1948 by the late Helen Essary Murphy, is awarded annually to a student who has given promise of sound citizenship and ability in "forthright reporting" in student publication and/or under the

jurisdiction of the Department of Journalism. The selection of the recipient will be made by a committee composed of the President of the University and two members of the Faculty.

Joshua Evans III Prize in the Political and Social Sciences.—This memorial prize of $75, "established by friends because of an outstanding life", is awarded annually to that man in the graduating class of The George Washington University "who has demonstrated his signal ability in the social and political sciences and who has given promise of the interpretation of that ability in good citizenship among his fellows". The selection of the recipient will be made by the President of the University and a committee from the Faculty of the Division of the Social Sciences.

Willie E. Fitch Prize.—The Willie E. Fitch Prize of $75, established in 1883 by James E. Fitch, in memory of his son, is awarded annually to a senior student for the best examination in chemistry.

Alice Douglas Goddard Prize.—This prize of $75 was established in 1941 by Frederick Joseph Goddard of Georgetown, D. C., in memory of Alice Douglas Goddard, and is awarded annually to the upper division student making the highest average in American literature.

Edward Carrington Goddard Prize.—This prize of $75 was established in 1923 by Mary Williamson Goddard, Alice Douglas Goddard, and Frederick Joseph Goddard, of Georgetown, D.C., in memory of Edward Carrington Goddard, class of '81, and is awarded to the junior or senior student making the highest average in the French language and literature.

James Douglas Goddard Prize.—This prize of $75 was established in 1923 by Mary Williamson Goddard, Alice Douglas Goddard, and Frederick Joseph Goddard, of Georgetown, D.C., in memory of James Douglas Goddard, class of '01, and is awarded to the senior student making the highest average in pharmacy.

Morgan Richardson Goddard Prize.—This prize of $75, was established in 1923 by Mary Williamson Goddard, Alice Douglas Goddard, and Frederick Joseph Goddard, of Georgetown, D. C., in memory of Morgan Richardson Goddard, and is awarded to the junior or senior student making the highest average in the following fields: economics, business administration, foreign commerce, and public accounting.

Gardiner G. Hubbard Memorial Prize in United States History.—This prize of $60 was established by Mrs. Gertrude M. Hubbard in memory of her husband, the late Gardiner G. Hubbard, and is awarded annually to that member of the graduating class majoring in history who has maintained the highest standing in courses in United States history.

Kappa Kappa Gamma Prize.—Kappa Kappa Gamma Sorority offers annually a prize of $10 to the full-time freshman who achieves the best record in Botany 1 and 2.

John Bell Larner Prize.—This prize, established by the bequest of John Bell Larner, consists of a medal which is awarded annually to that member of the graduating class in the Law School who attains the highest average grade in the entire course for the degrees of Bachelor of Laws or Juris Doctor.

Martin Mahler Prize in Materials Testing.—This prize established in 1953 by Martin Mahler consists of a one-year membership in the American Society for Testing Materials and is awarded to the upper division or graduate student in engineering who submits the best reports on tests in the Materials Laboratories course with preference given to prestressed concrete tests.

Mortar Board Prize.—This prize, consisting of a silver cup, is awarded annually to the woman student in the sophomore class having a scholarship average of *B* or higher and the most outstanding record in activities.

Omicron Delta Kappa Prize.—Alpha Delta Circle of Omicron Delta Kappa Fraternity offers annually a plaque to be awarded to "that member of the senior class who throughout his course has done the most constructive work in the furtherance and upbuilding of the University student activities".

John Ordronaux Prizes.—These prizes were established in 1909 by the bequest of John Ordronaux.

The amount of $150 is awarded to the member of the graduating class in the School of Medicine who has the highest scholastic standing.

The amount of $75 is awarded annually to the student in the Law School who has attained the highest average grade in the first year, full-time course; and $75 to the student who has attained the highest average grade in the second-year, full-time course.

Phi Eta Sigma Prize.—The George Washington University Chapter of Phi Eta Sigma offers annually to the male student attaining the highest scholastic average in his first full semester of work, a choice book selected from the field of the recipient's major interest. The winner's name will be engraved on a plaque in the Office of the Dean of the Junior College.

Pi Beta Phi Prize.—A prize of $20 is awarded annually by the District of Columbia Alpha Chapter of Pi Beta Phi Fraternity to that woman member of the senior class who throughout her college course has done the most constructive work in the promotion of student activities among the women of the University.

Psi Chi Prizes.—The George Washington University Chapter of Psi Chi, national honorary society in psychology, offers annually two awards in the field of psychology; the first, $25 to the best undergraduate student in Experimental Psychology; the second, $25 to the graduate student submitting the best Master's thesis in Psychology.

Ruggles Prize.—The Ruggles Prize of $35, established by Professor

William Ruggles in 1859, is awarded annually to a candidate for a baccalaureate degree for excellence in mathematics.

Sigma Kappa Prize.—Zeta Chapter of Sigma Kappa Sorority offers an annual prize of $10 to the student with the highest grade in the final examination in General Chemistry.

Sigma Tau Prize.—Xi Chapter of Sigma Tau Fraternity offers annually a medal to be awarded to that member of the freshman class in the School of Engineering who maintains the highest scholastic standing in the work of the entire year.

Society of Colonial Wars in the District of Columbia Prize.—This award, in the form of a gold medal, established in 1953 by the Society of Colonial Wars in the District of Columbia, is to be awarded to a candidate for a graduate degree who, in the judgment of the Faculty of the Department of History, submits a thesis or dissertation demonstrating excellence in historical research in American Colonial history. The University reserves the right to withhold the award if no thesis or dissertation attaining the required degree of excellence is submitted.

Staughton Prize.—The Staughton Prize of $30, established by the Reverend Romeo Elton, is awarded annually to the senior student making the best record in the Latin language and literature.

James MacBride Sterrett, Jr., Prize.—This prize, established in 1911 by Professor James MacBride Sterrett in memory of his son, consists of books awarded annually to that student who obtains the highest average in Physics 6, 7, and 8.

Charles Clinton Swisher Historical Club Prize.—This prize of $100, established in 1936 by the Charles Clinton Swisher Historical Club and augmented in 1941 by the bequest of Professor Charles Clinton Swisher, is awarded annually to the student who submits the best essay covering some phase of medieval history.

Theta Tau Activities Plaque.—Gamma Beta Chapter of Theta Tau Fraternity offers annually a plaque to be awarded to that member of the senior class who has the most outstanding record in activities in the School of Engineering during the entire period of his attendance.

Thomas F. Walsh Prize.—This prize of $150, established in 1901 by Thomas F. Walsh, is awarded annually to that student who submits the best essay in Irish history.

Washington Personnel Association Prize.—The Washington Personnel Association awards annually a certificate and $25 to an outstanding graduating senior in business administration who shows general excellence in studies, demonstrates superiority in one or more courses in personnel administration, and shows qualities of leadership or promise through extra-scholastic activities.

Alexander Wilbourne Weddell Prize.—This prize of $350, established in 1923, by Mrs. Virginia Chase Weddell, is awarded annually to a can-

didate for a degree who writes the best essay on the subject of "the promotion of peace among the nations of the world". The prize essays shall become the property of the University and shall not be printed or published without the written consent of the University. The University reserves the right to withhold the award if no essay attaining the required degree of excellence is submitted.

Military Awards

Society of American Military Engineers Gold Medal.—This medal and key, offered by the Society of American Military Engineers, is awarded annually to selected Air Force ROTC cadets in the next-to-last year of their engineering course and in the last year of such course. Nominations are made jointly by the Professor of Air Science and the Dean of the School of Engineering, and final selection is made nationally by a board of three senior Air Force officers.

Armed Forces Communications and Electronics Association Gold Medal Honor Award.—This medal and certificate, offered by the Armed Forces Communications and Electronics Association, are awarded annually to outstanding senior AFROTC cadets majoring in Electrical Engineering who demonstrate outstanding qualities of military leadership and distinguish themselves either academically or by leadership in campus activities.

Air Force Association Silver ROTC Medal.—This medal, offered by the Air Force Association, is awarded annually to that cadet who, after completion of Air Force ROTC summer training, is judged to be the outstanding cadet among those who have indicated their intention to apply for flying training upon graduation.

Reserve Officers' Association Medals.—Gold, silver, and bronze medals, offered by the Reserve Officers' Association of the District of Columbia, are awarded annually to those cadets enrolled in Air Science III, II, and I, respectively, who receive the highest grades for the current year in the leadership and academic phases of the Air Force ROTC course.

Chicago Tribune Gold ROTC Medal.—This medal, offered by *The Chicago Tribune*, is awarded each semester to that cadet enrolled in Air Science IV who has made an outstanding contribution to the effectiveness of the Air Force ROTC program by demonstrating the highest ideals of leadership and scholastic excellence.

Chicago Tribune Silver ROTC Medal.—This medal, offered by *The Chicago Tribune*, is awarded each semester to that cadet of the Air Force ROTC Basic Course who has demonstrated outstanding leadership potential and who has maintained excellent scholastic standing in the University.

Sons of the American Revolution ROTC Medal.—This medal, offered by the District of Columbia Society, Sons of the American Revolution, is awarded annually to that freshman cadet of each Air Force ROTC flight who demonstrates to the maximum degree traits and qualities of good citizenship and meets the prescribed requirements established by the donor.

Unit Leadership Trophy.—This silver trophy, offered by Walter G. Bryte, Jr., Colonel, USAF (Retired), first Professor of Air Science at this University, is awarded annually to the Air Force ROTC flight adjudged best in a competitive review and inspection. The Cadet Commander of this flight is presented a set of engraved Second Lieutenant's insignia.

The Colonial Cadet Rifle Trophy.—This trophy, offered by Master Sergeant Jerome Gleason, USAF, first coach of the Air Force ROTC Rifle Team at this University, is awarded to that cadet who is judged to be the outstanding member of the rifle team.

Arnold Air Society Scroll.—This scroll, offered by the Carl Spaatz Squadron of the Arnold Air Society, is awarded annually to the outstanding cadet completing the basic course with a cumulative average of *B* or better in Air Force ROTC courses.

Pershing Rifles Gold, Silver, and Bronze Achievement Medals.—These medals are awarded annually by the National Headquarters to those Air Force ROTC cadets who are Pershing Riflemen and who are judged to be outstanding examples of the ideals of the Pershing Rifles.

Republic Aviation Award.—This engraved identification bracelet and certificate, offered by the Republic Aviation Corporation, is awarded annually to that cadet enrolled in Air Science III who, in competition, makes the most effective verbal presentation on the Air Power theme.

The Convair Cadet Award.—This miniature of a Convair airplane and certificate, offered by the Consolidated Vultee Aircraft Corporation, is awarded annually to that cadet enrolled in Air Science II who achieves the highest cumulative grade in the basic course and who applies for flight training.

Reserve Officers' Association Junior Memberships.—Five junior memberships, offered by the Reserve Officers' Association of the District of Columbia, are awarded annually to the five Air Force ROTC cadets who obtain the highest grades in Air Science III.

National Rifle Association Club Champion Medal.—This medal, offered by the National Rifle Association, is awarded to a sophomore, junior, or senior member of the Air Force ROTC Rifle Team judged to be the outstanding member of the team based on marksmanship, participation in team matches, and contribution to the effectiveness of the team.

National Rifle Association Qualification Medals.—These medals, offered by the National Rifle Association, are awarded annually to mem-

bers of the Air Force ROTC Rifle Team qualifying as Expert, Sharpshooter, or Marksman in indoor rifle firing.

Air Force ROTC Rifle Team Awards.—Trophies, plaques, and medals are awarded annually to Air Force ROTC Rifle Teams through successful competition in the following:

The Air Force ROTC Liaison Area Championship Matches
The Army and Area Inter-collegiate and Inter-scholastic Matches
The Secretary of the Air Force ROTC Rifle Match
The William Randolph Hearst National ROTC Rifle Matches.

FINANCIAL AID

Student Assistantships

Graduate and undergraduate student assistantships are available in several departments of the University. Application should be made to the executive officer of the department of instruction concerned.

Internship

In memory of her mother, Anna Bartsch, Dr. Anna Bartsch-Dunne established in 1946 a fund which provides $15 a month to aid in the support of an internship in the University Hospital.

Loan Funds

The following loan funds are available to students in the University in accordance with the qualifications placed thereon by the donors. Inquiries should be directed to the Office of the Treasurer.

University Loan Fund.—The Trustees of The George Washington University have established a loan fund of $10,000.

Home Economics Loan Fund.—This fund of $382.35, contributed by the D. C. Home Economics Association, is available for loans to senior girls majoring in Home Economics.

Kellogg Medical School Loan Fund.—The W. K. Kellogg Foundation in Battle Creek, Michigan, has established a fund of $19,225.64 for loans to students in the School of Medicine.

Law Association Loan Fund.—The George Washington Law Association has established a loan fund in the amount of $853.15 for loans to students in the Law School.

School of Medicine Loan Fund.—This fund of $2,225.42, contributed by medical students, is available for loans to students in the School of Medicine.

Pfizer Medical School Loan Fund.—The Chas. Pfizer & Co., Inc., has

established a fund of $1,001.33 for loans to students in the School of Medicine.

Benjamin Schoenfeld Memorial Pharmacy Loan Fund.—This fund, established by the family and friends of Benjamin Schoenfeld, in the amount of $1,900.47, is available for loans to students studying pharmacy.

Henry Strong Educational Foundation.—The Henry Strong Educational Foundation, established at Chicago under the will of General Henry Strong, makes available a fund for loans to both men and women students under the age of twenty-five years.

Henry Strong-William A. Maury Loan Fund.—This fund, also allocated from the funds of the Henry Strong Educational Foundation, is to be loaned to students under the age of twenty-five years in the George Washington University Law School.

Sutherland Medical School Loan Fund.—This fund, in the amount of $1,381.00 and established by Mrs. Rose L. Sutherland, is available for loans to students in the School of Medicine.

REGULATIONS

A student enrolled in the University is required to conform to the University regulations and to comply with the rules and regulations of the college, school, or division in which he is registered.

A student who withdraws or is suspended, or is otherwise absent from the University for one semester or more, may re-enter and continue his work only under the rules and regulations in force at the time of his return.

If a student knowingly makes a false statement or conceals material information on an application for admission, registration card, or any other University document, his registration may be canceled and he will be ineligible (except by special action of the Faculty) for subsequent registration in any unit of the University.

ATTENDANCE

A student is not permitted to attend classes until registration has been completed and fees due have been paid. Regular attendance is required. A student may be dropped from any course for undue absence.

A student who has been suspended, either for delinquency in payment of fees or for any other reason, is not permitted to attend classes during the period of suspension.

For further regulations regarding attendance, consult the announcements of the several colleges and schools.

SCHOLARSHIP REQUIREMENTS

A student who fails to maintain the scholarship requirements of the college, school, or division in which he is registered may be dismissed from the University.

Grades

Grades are not given out by instructors but are mailed to the student through the Office of the Registrar at the close of each semester. Upon request, a copy of the student's grades will be forwarded to his parent or guardian.

The following grading system is used: excellent *A;* good, *B;* average, *C;* passing, *D;* failing, *F*. Whenever a grade has not been assigned, the symbol *Inc.* (incomplete) or the symbol *W* (authorized withdrawal) will be recorded. The symbol *Inc.* indicates that a satisfactory explanation has been given the instructor for the student's failure to complete the

required work of the course. An "incomplete" can not be made up after the lapse of one calendar year except by permission of the Faculty. Courses from which a student has withdrawn by proper authorization will be indicated by the symbol *W*. No student may repeat for grade a course in which he has received a grade of *D* or above, unless required to do so by the department concerned.

For graduate work, grades are indicated as "excellent", "satisfactory", "unsatisfactory".

For the grading systems of the Law School and the School of Medicine, see the explanations in the announcements of those schools.

Quality-Point Index

Quality points are computed from grades as follows: *A*, four points; *B*, three points; *C*, two points; *D*, one point; *F*, no points, for each semester hour for which the student has registered.

Scholarship is computed in terms of the quality-point index, obtained by dividing the number of quality points by the number of semester hours for which the student has registered, both based on the complete collegiate record. Courses marked *W* or *Inc.*, are not considered in determining the index, except that courses marked *Inc.* will be considered when a formal grade is recorded, or at the close of a calendar year, whichever occurs first. If an "incomplete" is not superseded by a proper grade within the allotted time, it is computed as zero quality points. Grades in courses taken at another institution are not considered in computing the quality-point index.

Examinations

Examinations are scheduled in all courses at the end of each semester or at the completion of the course.

For further regulations regarding examinations, consult the announcements of the several colleges, schools, and divisions.

Academic Dishonesty

Evidence of dishonesty on the part of any student will result in his suspension from the University upon the recommendation of the appropriate dean's council.

A student found guilty of dishonesty will be deprived of credit for *all courses* in the semester during which the dishonest act occurs.

A student may apply for readmission to the University after the expiration of not less than one calendar year from suspension. Action upon such application will be taken by the dean's council. The dean's

council will recommend to the President that a student suspended twice for dishonesty will not be readmitted.

WITHDRAWAL

Withdrawal from a course or from the University, *without academic or financial penalty*, requires the permission of the dean of the college, school, or division in which the student is registered. Permission to withdraw from the University will not be granted a student who has not a clear financial record. (See "Fees and Financial Regulations", pages 24–27.)

Withdrawal between October 31 and the end of the fall semester and between February 28 and the end of the spring semester is permitted only in exceptional cases.

All charges for courses dropped without the approval of the dean must be met by the student. Reporting the dropping of a course to an instructor does not effect its discontinuance.

A student may not withdraw from either the basic course or the advanced course of the Air Force ROTC without the approval of the President of the University.

CHANGES IN PROGRAM OF STUDIES

Changes within a College, School, or Division.—A student may not change or drop courses (see "Withdrawals", above) or change his status to that of auditor except with the approval of the dean of the college, school, or division in which he is registered, upon presentation of adequate reasons for such changes.

Change from one section to another of the same course may be made with the approval of the dean and the department concerned.

Change from one major subject to another within the same college or school may be made with the approval of the dean. All requirements specified in the course of study to which the change is made must be satisfied.

Transfer within the University.—Transfer from one college, school, or division to another may be made only with the approval of the deans concerned. Except in cases of normal progression from the Junior College to Columbian College or the School of Government in a regular four-year program, application for transfer must be made to the Director of Admissions on the proper form provided by his office.

In order to provide degree candidates with proper academic counsel and the benefits of integrated programs of study, the faculties of the various schools and colleges have established minimum residence requirements and regulations with regard to supervision of the work done in the student's major field. In addition, various special regulations re-

garding course sequence, selection of electives, and advisory approval of programs apply in particular curricula. Students transferring within the University are advised to study carefully the graduation requirements on pages 50–52 and to note that in all undergraduate divisions 30 semester hours, including *at least 12 semester hours* in the major field, must be completed *in residence* in the school or college from which the degree is sought. Upon transfer the student should consult the dean concerned and understand clearly the requirements he must fulfill.

CREDIT

Credit toward a degree is given only after regular registration for and satisfactory completion of the required work of classes in the University, or upon the granting of advanced standing in accordance with the regulations of the several colleges, schools, and divisions.

On request the Registrar will issue to the student a balance sheet showing the amount of work completed and the requirements, both quantitative and qualitative, remaining to be met for the degree.

In special instances, a person who has been admitted to the University may be registered, with the permission of the instructor, as an "auditor" in a class (no academic credit). An auditor is not required to take active part in the exercises or to take examinations.

Transcripts of Record

Official transcripts of student records will be forwarded on request to other institutions. Unofficial copies of records will be issued to the student on request. No charge is made for the first transcript; a fee of one dollar is charged for each one thereafter. No certificate of work done will be issued for a student who does not have a clear financial record.

Summer School Credit

A student who plans to attend summer school sessions at another institution with the intention of having credits so obtained apply toward graduation from this University must first secure the written approval of the dean of his college or school. In no event will such credits be recognized to an amount in excess of that which might be earned in a similar period in this institution.

PHYSICAL EDUCATION REQUIREMENTS

Students in the Junior College and freshmen and sophomores in the School of Engineering are required to take Physical Education 1–2 and

11–12 unless they are registered for less than 9 semester hours or unless regular employment during the day makes it necessary to take all classes during the evening hours. Air Force ROTC cadets and a limited number of freshman and sophomore women may substitute Air Science 1–2 and 11–12 for the physical education requirement.

Any other exemptions will be granted only upon written petition which has been recommended by the physical education department concerned and approved by the dean of the college or school in which the student is registered.

Junior College students exempt from the physical education requirement will be required to substitute four hours of elective.

A student entering the University with advanced standing is not exempt from the physical education requirements unless he has satisfactorily met the requirements elsewhere.

The required medical and physical examinations, as specified by the departments of physical education, will be arranged at the time of registration.

GRADUATION REQUIREMENTS

To be recommended by the Faculty for graduation a student must have met the admission requirements of the college or school in which he is registered, completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree for which he is registered, and be free from all indebtedness to the University.

Application for Graduation.—Application for a degree should be filed in the Office of the Registrar at the time of registration for the last semester of the senior or final year.

Scholarship.—In all undergraduate divisions of the University the scholarship requirement for graduation is a quality-point index of at least 2.00.

The graduate student must meet the scholarship requirements for the particular degree for which he is registered.

Curriculum.—Minimum curriculum requirements for each degree are stated under the college or school offering work in preparation for the degree. (For Air Force ROTC graduation requirements see the Department of Air Science.)

Residence.—Unless otherwise specified, in all undergraduate divisions of the University, ***a minimum of thirty semester hours, including at least twelve hours in the major field, must be completed in residence in the school or college from which the degree is sought.*** This requirement applies to students transferring within the University as well as to students transferring from other institutions. Summer work may be counted in residence, but in no case may the period of residence aggregate less than thirty weeks. Unless special permission is granted by the dean of

the college or school concerned to pursue work elsewhere, the work of the senior or final year must be completed in residence.

The graduate student must meet the residence requirements for the particular degree for which he is registered.

With the permission of the dean of the college or school concerned, a student may be granted leave of absence; such student should, however, remain technically in residence by paying the residence fee for each semester he is absent. For the purpose of this regulation, the summer session will be disregarded.

Graduate Record Examination.—All candidates for Bachelor's degrees in Columbian College, the School of Engineering, and the School of Government are required to take two parts of the Graduate Record Examination in the University's institutional testing program. The examinations are conducted by the University twice a year: the Fall Testing Session (December 8, 1956) for seniors graduating in February, and the Spring Session (April 13, 1957) for those graduating in June or October. Dates of the examinations are announced in the *Schedule of Classes.*

Each senior required to take the Graduate Record Examinations must register for them in the office of his dean when he registers for his final regular semester of study (excluding summer sessions). A $5 examination fee is payable at the time of registration.

Students will receive individual reports of test scores and may avail themselves of the regular transcript services of the Educational Testing Service. By special permission seniors who expect to graduate in June may take the Graduate Record Examinations at the previous Fall Testing Session, so as to have transcripts available early in the year when applying for admission to graduate schools.

See the announcements of the various schools and colleges in this CATALOGUE for a description of the tests required.

Attendance and Conduct.—The University reserves the right to refuse to confer a degree upon a candidate whose attendance or conduct has been unsatisfactory.

Comprehensive Problem, Thesis, or Dissertation.—A comprehensive problem, thesis, or dissertation submitted in partial satisfaction of requirements for the Master's degrees, the professional degrees in engineering, the degree of Doctor of Education, the degree of Doctor of Juridical Science, the degree of Doctor of Business Administration, or the degree of Doctor of Philosophy must be presented in its final form to the dean of the college or school concerned not later than the date specified in the University calendar. Three copies of each comprehensive problem, thesis, or dissertation are required, one typewritten original and two legible and complete carbon copies. Detailed instructions for the

styling of all comprehensive problems, theses, or dissertations should be obtained from the appropriate dean.

Accepted comprehensive problems, theses, or dissertations, with accompanying drawings, become the property of the University and are deposited in the University Library, where the duplicate copies are bound and made available for circulation. Permission to publish or adapt material in the comprehensive problem, thesis, or dissertation must be secured from the appropriate dean.

Presence at Graduation.—A candidate is required to be present at the graduation exercises unless written application for graduation in absentia is approved by the dean of his college or school.

Honors

With distinction.—In all undergraduate divisions of the University the degree may be conferred "with distinction", at the discretion of the Faculty, if a student attains a quality-point index of 3.50 or higher on all work taken at this institution except that taken during the semester immediately preceding the granting of the degree. To be eligible for this honor a student must have completed at this institution at least one-half of the work required for the degree.

In the School of Medicine and the Law School, degrees may be conferred "with distinction", at the discretion of the Faculty, on those students who attain an average of *A* on all work taken for the degrees.

Special honors.—Special honors may be awarded by the Faculty to any member of the graduating class for outstanding achievement in the student's major field of work on recommendation of the major department, under the following regulations:

1. The student must have his candidacy for special honors approved by the faculty member representing the major department or field not later than the beginning of the senior year.

2. The student must meet such other conditions as may be set at the time his candidacy is approved.

3. No student will be awarded special honors unless he has a quality-point index of at least 3.00 on all work taken at this institution except that taken during the semester immediately preceding the granting of the degree.

4. To be eligible for honors a student must have completed at this institution at least one-half of the work required for the degree prior to the beginning of the semester immediately preceding the granting of the degree.

Military honors.—An Air Force ROTC cadet may be designated a "Distinguished Air Force ROTC Cadet" if he (1) has completed Air Science III with an academic standing among the upper third of the stu-

among the upper third of all students in the institution pursuing the same academic major and scheduled to graduate the same school year, dents enrolled therein; (2) has an accumulative academic standing or an accumulative academic average of *B* or better; (3) possesses high moral character and definite aptitude for service in the Air Force; (4) has distinguished himself by demonstrated leadership through participation in recognized extra-curricular activities and while in attendance at Air Force ROTC Summer Training Unit. A "Distinguished Air Force ROTC Cadet" is authorized to wear a "Distinguished" badge centered above the right breast pocket of the uniform. He may submit an application for a regular commission in the United States Air Force, which is given final consideration upon his designation as a "Distinguished Air Force ROTC Graduate".

An Air Force ROTC cadet may be designated a "Distinguished Air Force ROTC Graduate" if he has (1) been designated a "Distinguished Air Force ROTC Cadet" and maintained the standards required of a "Distinguished Air Force ROTC Cadet" during the period between designation and graduation; (2) completed the Air Force ROTC Advanced Course; and (3) completed the requirements for a Bachelor's degree. A "Distinguished Air Force ROTC Graduate" will be presented with a certificate signed by the Commandant, Air Force ROTC, and, if he made application, will be considered for a regular commission in the United States Air Force.

THE LIBRARY

A student registered in the University is entitled to the reference use of the University Library. The Student Identification Card, issued upon the payment of fees, must be presented as identification.

The loan period for most books available for home circulation is two weeks, with an additional two-week renewal. A fine of five cents will be charged for each day a book is overdue. Any book which does circulate is subject to recall by the Librarian at any time. Reserve books for collateral reading must be used in the reading rooms when the Library is open. With special permission they may be drawn for overnight use when the Library closes. A fine of twenty-five cents will be charged for the first hour or fraction of an hour and five cents for each hour or fraction thereafter that a reserve book is overdue. Grades of a student will be withheld until his library record is clear.

RIGHT TO DISMISS STUDENTS

The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the

interest of the student or the University, the University Administration deems it advisable to do so.

RIGHT TO CHANGE RULES

The Unversity and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

PROPERTY RESPONSIBILITY

The University is not responsible for the loss of personal property in any University building. A "Lost and Found" Office is maintained in the Student Union.

THE COLLEGES, SCHOOLS, AND DIVISIONS

THE JUNIOR COLLEGE

THE FACULTY AND STAFF OF INSTRUCTION *

George Martin Koehl, A.M., *Dean of the Junior College*
William Lewis Turner, Ph.D., *Assistant Dean of the Junior College*
Carr Bartleson Lavell, A.M., *Assistant Dean in the Junior College*

Thomas Benjamin Brown, Ph.D., *Professor of Physics*
Henry Grattan Doyle, A.M., LL.D., Litt.D., *Professor of Romance Languages*
†**Norris Ingersoll Crandall, M.Arch.,** *Professor of Art*
James Henry Taylor, Ph.D., *Professor of Mathematics*
Elmer Louis Kayser, Ph.D., LL.D., *Professor of European History*
Warren Reed West, Ph.D., *Professor of Political Science*
Ruth Harriet Atwell, A.M., *Professor of Physical Education for Women*
Francis Edgar Johnston, Ph.D., *Professor of Mathematics*
Benjamin Douglass Van Evera, Ph.D., Sc.D., *Professor of Chemistry*
Merle Irving Protzman, Ph.D., *Professor of Romance Languages*
Ralph Dale Kennedy, Ph.D., *Professor of Accounting*
Florence Marie Mears, Ph.D., *Professor of Mathematics*
Wood Gray, Ph.D., *Professor of American History*
‡**Thelma Hunt, Ph.D., M.D.,** *Professor of Psychology*
Ira Bowers Hansen, Ph.D., *Professor of Zoology*
Paul William Bowman, Ph.D., *Professor of Biology*
Arthur Edward Burns, Ph.D., *Professor of Economics*
John Withrow Brewer, Ph.D., *Professor of International Law*
Frances Kirkpatrick, A.M., *Professor of Home Economics*
Louis Clark Keating, Ph.D., *Professor of Romance Languages*
William Henry Myers, A.M., *Professor of Physical Education for Men*
Harold Loran Geisert, Ph.D., *Professor of Sociology*
‡Samuel Nathaniel Wrenn, Ph.D., *Professor of Chemistry*
Charles Rudolph Naeser, Ph.D., *Professor of Chemistry*
Howard Maxwell Merriman, Ph.D., *Professor of American Diplomatic History*
Ernest Sewall Shepard, A.M., *Professor of English Literature*
Fred Salisbury Tupper, Ph.D., *Professor of English Literature*

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* The President of the University, the Dean of Faculties, the Dean and Assistant Deans of the College, the Registrar of the University, the Director of Admissions of the University, Professors, Adjunct Professors, Associate Professors, Assistant Professors, and Instructors constitute the Faculty.
† On leave of absence fall semester 1956–57.
‡ On sabbatical leave fall semester 1956–57.

Charles Watson Bliven, M.S., *Professor of Pharmacy*
Alan Thomas Deibert, A.M., *Professor of Romance Languages*
Myron Law Koenig, Ph.D., *Professor of American History*
Calvin Darlington Linton, Ph.D., *Professor of English Literature*
Charles Edward Gauss, Mus.B., Ph.D., *Elton Professor of Philosophy*
Elbridge Colby, Ph.D., *Professor of Journalism*
Donald Chenoweth Kline, B.Arch, M.F.A., *Professor of Art*
Helen Bennett Lawrence, A.M., *Professor of Physical Education for Women*
Charles William Cole, Ph.D., *Professor of American Literature*
George Martin Koehl, A.M., *Professor of Physics*
Lubin Poe Leggette, A.M., *Depew Professor of Speech*
Robert Dale Campbell, Ph.D., *Professor of Geography*
John Francis Latimer, Ph.D., *Professor of Classical Languages and Literatures*
Joseph Henry Krupa, M.S., Ed.D., *Professor of Physical Education for Men*
*Roderic Hollett Davison, Ph.D., *Professor of European History*
Calvin Weir Pettit, Ph.D., *Professor of Speech*
Kathryn Mildred Towne, A.M., *Professor of Home Economics*
Elizabeth Burtner, A.M., *Professor of Physical Education for Women*
Robert Corbin Vincent, Ph.D., *Professor of Chemistry*
Edith Elizabeth Mortensen, Ph.D., *Professor of Zoology*
Antonio Alonso, A.M., *Associate Professor of Spanish*
Gretchen Louisa Rogers, Ph.D., *Associate Professor of German*
Wolfram Karl Legner, Ph.D., *Associate Professor of German*
William Lewis Turner, Ph.D., *Associate Professor of English*
Averett Howard, A.M., *Associate Professor of English Composition*
Curtis Edward Tuthill, Ph.D., *Associate Professor of Psychology*
George Francis Henigan, Jr., Ph.M., *Associate Professor of Speech*
Robert Hamilton Moore, Ph.D., *Associate Professor of English Composition*
Edwin Lockwood Stevens, A.M., *Associate Professor of Speech*
Reuben Esselstyn Wood, Ph.D., *Associate Professor of Chemistry*
Muriel Hope McClanahan, Ph.D., *Associate Professor of English Composition*
†Nels David Nelson, Ph.D., *Associate Professor of Mathematics*
Sam Clark Munson, Ph.D., *Associate Professor of Biology*
James Harold Coberly, Ph.D., *Associate Professor of American Literature*
Carr Bartleson Lavell, A.M., *Associate Professor of Sociology*
William Frederick Sager, Ph.D., *Associate Professor of Chemistry*

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* On sabbatical leave fall semester 1956–57.
† On sabbatical leave spring semester 1956–57.

Raymond George Hanken, B.S. in P.E., A.M. in Ed., *Associate Professor of Physical Education for Men*
Willard Edmund Caldwell, Ph.D., *Associate Professor of Psychology*
Don Carlos Faith, Ph.D., *Associate Professor of Educational Psychology*
Rafael Supervía, Doctor en Derecho, *Associate Professor of Spanish*
James Willard Harkness, B.S., Ed.M., *Associate Professor of Chemistry*
Mildred Hollander Shott, A.M., *Associate Professor of Secretarial Studies*
Clifton Earl Olmstead, A.B., Th.D., *Associate Professor of Religion*
Lewis Slack, Ph.D., *Associate Professor of Physics*
Ronald Bettes Thompson, Ph.D., *Associate Professor of European History*
Philip Highfill, Jr., Ph.D., *Associate Professor of English Literature*
Vincent James DeAngelis, B.S. in P.E., A.M. in Ed., *Associate Professor of Physical Education for Men*
John Gage Allee, Jr., Ph.D., *Associate Professor of English*
Theodore Peter Perros, Ph.D., *Associate Professor of Chemistry*
Bernard Hayman Fox, Ph.D., *Assistant Professor of Psychology*
Richard Catlin Haskett, Ph.D., *Assistant Professor of American History*
James Willis Robb, A.M., *Assistant Professor of Romance Languages*
Howard Roland Ludden, A.M., *Assistant Professor of Political Science*
Edith Shores Surrey, A.M., *Assistant Professor of Speech*
Robert Crumpton Willson, A.B., *Assistant Professor of Journalism*
Lee Sheward Bielski, A.M., *Assistant Professor of Speech*
William Graham Clubb, Ph.D., *Assistant Professor of French*
Walter David Fackler, A.B., *Assistant Professor of Economics*
Helen Zhemchuzhnaya Yakobson, B.S., *Assistant Professor of Russian*
Wilson Emerson Schmidt, Ph.D., *Assistant Professor of Economics*
Harland Walter Westermann, A.M., *Assistant Professor of Geography*
Alton Harold Desmond, Ph.D., *Assistant Professor of Zoology*
William Edward Schmidt, Ph.D., *Assistant Professor of Chemistry*
David Gover White, B.Ch.E., Ph.D., *Assistant Professor of Chemistry*
John Gilbert Palmer, Ph.D., *Assistant Professor of Botany*
Richard Ernest Murphy, A.M., *Assistant Professor of Geography*
John Palmer Reesing, Jr., Ph.D., *Assistant Professor of English*
Edward Felix Turner, Jr., Ph.D., *Assistant Professor of Physics*
Eva Mayne Johnson, A.M., *Assistant Professor of Psychology*
Carol Ruth St. Cyr, Ph.D., *Assistant Professor of Education*
Richard Walton Stephens, A.M., *Assistant Professor of Sociology*
Chester Hayden McCall, Jr., A.M., *Assistant Professor of Statistics*
Wilbur Earle Benson, M.B.A., *Assistant Professor of Accounting*
Joseph Louis Metivier, Jr., A.M., *Instructor in Romance Languages*
Mary Jane Cook, A.M., *Instructor in English Composition*
Ruth Haverstock Ness, M.S., *Instructor in Chemistry*

Roy Clay Putman, A.M., *Instructor in English Composition*
Richard Bruce Erno, A.M., *Instructor in English*
Andre-Guy LaCerte, M.S., *Instructor in Physics*
John Lyle Prather, A.B., *Instructor in Physics*

COMMITTEES*

The Dean's Council†

1957
Sam Clark Munson
James Willis Robb

1958	1959
Richard Catlin Haskett	Francis Edgar Johnston
Theodore Peter Perros	John Gage Allee, Jr.

Committee on Admission and Advanced Standing

Carr Bartleson Lavell, *Chairman*

Edith Elizabeth Mortensen	James Harold Coberly
Richard Catlin Haskett	William Graham Clubb

Committee on Scholarship

William Lewis Turner, *Chairman*

Robert Corbin Vincent	Edward Felix Turner
Raymond George Hankin	Carr Bartleson Lavell

Eva Mayne Johnson

Junior College Advisory Committee

Dean of the Junior College, *Chairman*

Ruth Harriet Atwell	Frances Kirkpatrick
Charles Watson Bliven	Joseph Henry Krupa
Robert Corbin Vincent	William Lewis Turner
Carr Bartleson Lavell	Mildred Hollander Shott
Lee Sheward Bielski	Carol Ruth St. Cyr

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* The President of the University and the Dean of the Junior College are members ex officio of all committees.
† Elected by the Faculty.

GENERAL INFORMATION

INTRODUCTORY

The Junior College, which administers the first two years of the standard four-year college program in the liberal arts and sciences, was established in 1930, as a part of the academic reorganization of the University. Prior to 1930, the four-year program had been administered by Columbian College since its organization in 1821.

The Junior College curricula continue the studies of a general cultural nature begun in the secondary schools, and lay a foundation for the more specialized work which is to follow. Emphasis is accordingly laid (1) upon the social, cultural, biological, and physical background of civilization and (2) upon the discipline necessary to the effective prosecution of more advanced work.

The Junior College also provides the preprofessional work required for admission to the schools of Pharmacy, Education, and Government, and the first two years of the preprofessional work required by the schools of Medicine and Law.

In addition it provides the following two-year curricula in vocational training: Accounting, Home Economics, Medical Technology—Basic Course, Physical Sciences, and Secretarial Studies.

Advisory System

In order that students may have opportunities for assistance in planning their courses and also for obtaining personal, educational, and vocational advice in every phase of their academic work during the first two years, a number of members of the Faculty serve as advisers to Junior College students.

Members of the Faculty, selected for their knowledge of Junior College requirements and student programs, advise students in making up their programs of study for each semester. A separate staff of experienced advisers under the chairmanship of the Dean assists those students who find it difficult to make adjustments to college life because of scholastic or other reasons. Students who are "warned" or who are on probation may be required to consult these advisers at regular intervals. Students are encouraged to consult any member of the Advisory Staff or their instructors about college problems at any time.

Copies of notices of "warning" or probation will be sent to the parents or guardians of students on request, and the Dean and members of the Advisory Staff are available for consultation with parents or guardians concerning student problems.

Students in the Junior College are subject to, and are expected to familiarize themselves with, the regulations regarding Admission, Regis-

TRATION, FEES AND FINANCES *stated on pages 12–27, and the University regulations stated on pages 46–54.*

SCHOLASTIC-APTITUDE TESTS

Students admitted to the Junior College may be required to take the scholastic-aptitude tests of the University.

REQUIRED PLACEMENT EXAMINATIONS

English.—Special placement examinations, required of all entering freshmen, will be conducted by the English Department. Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those students who show marked superiority may, upon passing further tests, be exempted from one or both halves of the English Composition course; those who are inadequately prepared for English 1 will be assigned to English A.

Romance Languages.—A standardized placement examination will be required of all entering students who wish to continue in college the language begun in high school. Upon completion of the examination assignment will be made to the appropriate course with credit to be assigned on the usual basis. This does not apply to students whose previous experience in a given language is equivalent to two college years.

The Use of Correct English.—The use of correct English, oral or written, is required not only in English but also in all other courses (see page 84).

FIRST- AND SECOND-GROUP COURSES

A Junior College student may not take second-group courses (courses numbered 101–200) without the written permission of the instructor and of the Dean of the Junior College. A student will not be permitted to postpone a first-group course required under the curriculum for which he is registered in order to take a second-group course for elective credit. The principle that first-group courses must be taken in the Junior College years, and advanced courses in Columbian College and the professional schools, will be rigidly adhered to in approving student programs. No student on probation is permitted to take second-group courses except by the express permission of the Committee on Scholarship.

AMOUNT OF WORK

Sixteen or seventeen semester hours constitute a normal academic load. A student not on probation may be permitted by the Dean to take eighteen semester hours.

A student having a quality-point index of 3.50 may, with the permission of the Dean, take nineteen or twenty semester hours. No student may take more than twenty semester hours, except with the permission of the Committee on Scholarship.

For an employed student working more than twenty-four hours a week, ten semester hours constitute a normal academic load. An employed student not on probation may be permitted by the Dean to take eleven semester hours. An employed student having a quality-point index of 3.50 may be permitted by the Dean to take thirteen or fourteen semester hours.

A student previously unemployed who accepts employment subsequent to registration or at any time during a semester is required to report that fact immediately to the Dean, to bring his program within the limitations set by the Faculty for the amount of work to be carried by an employed student.

Attendance

The student is held responsible to the instructor in charge of the course for which he is registered for all the work of the course, and all absences must be excused before provision will be made for him to make up the work missed.

With the exceptions noted below, occasional absences from a course, not to exceed in number the semester hours credit for the course, will be automatically excused. (If a course has distinct divisions such as lectures, laboratories, recitations, etc., these excuses apply pro rata to such separate divisions.) In the application of this rule absences immediately preceding or following holiday periods are to be counted double.

Such automatic excuses are intended to cover the occasional minor exigencies and not to constitute an indiscriminate privilege. A student on probation is allowed no automatic excuses.

Excuses for absences from two or more consecutive class periods, and for absences from examinations which have been announced in advance, can be obtained only by making written application to the instructor in charge of the course.

A student whose absences from any class, whether excused or unexcused, are in excess of one-fourth of the total number of class periods will receive the grade of *F* for the course, except by special ruling of the Dean on recommendation of the instructor in the course.

Classification of Students

A student who has satisfactorily completed at least thirty-two semester hours of work including eighteen semester hours in his curriculum requirements, is classed as a *sophomore*.

THE DEGREES

Upon the satisfactory completion of the requirements of the Junior College, the degree of Associate in Arts or Associate in Science is conferred.

REQUIREMENTS FOR THE DEGREES

Residence

The last fifteen hours of work required for the Associate's degrees must be taken in residence in the Junior College.

Scholarship

The system of grading and of computing scholarship is described in detail on pages 46 and 47.

In order to receive the degree of Associate in Arts or Associate in Science a student must have a quality-point index of at least 2.00.

Honor Roll.—The name of every student who has a quality-point index of 3.50 or higher on the basis of his complete record at this University will be placed on the honor roll and published. No consideration is given to those who have completed a total of less than fifteen semester hours. A place on the honor roll does not necessarily mean that the student will receive honors upon graduation.

Dean's List.—The name of every student who makes a quality-point index of 3.50 or higher on a minimum of fifteen semester hours of work taken in any one semester will be placed on the Dean's List for that semester.

Probation.—A student must maintain a quality-point index of at least 2.00 or be placed on probation.

A student remains on probation as long as his quality-point index is below 2.00; however, the student who has a quality-point index between 1.50 and 2.00 will be considered by the Committee on Scholarship, which may retain him on probation or suspend him.

Suspension.—A student who has a quality point index below 1.50 will be suspended; however, a student who has a quality-point index between 1.40 and 1.50 will be considered by the Committee on Scholarship, which may retain him on probation or suspend him.

A student who is subject to probation for the third time, whether successive or after an interval, will be suspended.

A student suspended for poor scholarship may apply for readmission after an interval of one calendar year. On application for readmission the student must submit specific evidence to the Committee on Scholarship that he is better qualified to pursue college work. A student suspended twice for poor scholarship will not be readmitted.

The foregoing scholarship rules are applied when a student has undertaken a minimum of twelve hours. Thereafter, the rules are applied in multiples of nine hours.

Warnings.—At stated intervals during the academic year instructors file in the Office of the Junior College the names of those students who are doing work of *D* grade or lower. A "warning" will then be sent to the student and a copy of the warning filed with the appropriate adviser. A "warning" constitutes notice to the student that he must consult his instructor and adviser at the earliest opportunity. "Warning periods" are established between the 7th and 8th weeks of the fall and spring semesters.

Curriculum Requirements

The satisfactory completion of sixty-four semester hours of college work is required, as outlined in one of the Junior College curricula described below.

Except for students registered for the combined degrees of Bachelor of Arts and Doctor of Medicine, not more than twelve semester hours of professional courses may be included in the one hundred and twenty-four semester hours required for the Bachelor's degrees in Columbian College. Junior College students electing professional courses under this rule must obtain the approval of the Dean of the Junior College before registering for these courses.

Physical Education Requirements.—Physical Education or Air Force ROTC. Leadership Laboratory is required of all students in the freshman and sophomore years. (See "Physical Education Requirements", pages 49 and 50.)

Foreign Language Requirements.—In curricula requiring foreign languages a student must complete satisfactorily the equivalent of two years of college work in a single foreign language.

A student offering for admission four acceptable high school units of a single foreign language, or the equivalent, is not required to take any foreign language.

A student who offers less than four units and wishes to meet the Junior College requirement by continuing in the same language must take the language placement test (see page 62).

In general, one year of high school language is considered to be equivalent to one semester of college language.

In some instances foreign languages are required or recommended as a preparation for advanced work in Columbian College and the professional schools. The student should consult his adviser as to these requirements, so that appropriate foreign languages may be included, when necessary, in his Junior College program.

English Requirements.—Entering students registering in the pre-Columbian College curricula will follow the sequence of English 1, both halves of one of the introductory literature courses, and English 4. This does not apply to students transferring to these curricula or students registering in the preprofessional or vocational curricula. Students whose plans require the completion of English 1 and 2 before taking the required literature course must secure permission from the Dean.

JUNIOR COLLEGE CURRICULA

I. CURRICULA FOR ADMISSION TO COLUMBIAN COLLEGE AND THE PROFESSIONAL SCHOOLS

Each of the following curricula comprises the first two years of a standard four-year college course and prepares the student for upper division work.

All curricula in this group lead to the degree of Associate in Arts.

A. COLUMBIAN COLLEGE:

1. ARTS AND LETTERS

The following two-year curriculum prepares for the Bachelor of Arts program in Columbian College:

		Semester Hours
English Composition and Literature	English 1; 51–52, 71–72, 91–92, Classical Languages 71–72, French 51–52, German 51–52, or Spanish 51–52; English 4	12
Foreign Language	See page 65 for foreign language requirement	12
Physical Education	See pages 49–50 for statement of requirement	4
Science	Biology 1–2, Botany 1, 2, Chemistry 3–4, 11–12, Physics 5, 7 (6, 7), (5, 6), or Zoology 1–2	6–8
Social Studies	Economics 1–2, Geography 51, 52, History 39–40, 71–72, Political Science 9–10, or Sociology 1–2	6
Elective*		22 or 24
	Total	64

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* It is suggested that electives include one of the following courses: Art 11–12, 71–72; Philosophy 51–52, 111–12; Religion 9–10, 59–60.

The student should obtain the advice of his major department as to proper prerequisite and collateral courses for the intended major.

Credit is not given for courses elected in Physical Education or Secretarial Studies.

2. SCIENCE

The following two-year curriculum prepares for the Bachelor of Science curriculum in Columbian College:

		Semester Hours
English Composition and Literature	English 1; 51–52, 71–72, 91–92, Classical Languages 71–72, French 51–52, German 51–52, or Spanish 51–52; English 4	12
Foreign Language	French or German or non-science elective. NOTE.—A reading knowledge of French or German is required. This may be satisfied by French 4 or German 4 or by special examination.	12
Mathematics	Mathematics 3, 6, or electives. NOTE.—The Mathematics 3 requirement may be satisfied by offering two years of high school algebra acceptable for admission; the Mathematics 6 requirement may be satisfied by offering one-half year of high school trigonometry acceptable for admission.	6
Physical Education	See pages 49–50 for statement of requirement	4
Science	(a) Biology 1–2, Botany 1, 2, Zoology 1–2 (b) Chemistry 11–12, Physics 5, 7 (6, 7) (5, 6) (In satisfying this requirement, at least one year-course must be taken in each group (a) and (b).)	18 to 22
Social Studies	Economics 1–2, Geography 51–52, History 39–40, 71–72, Political Science 9–10, or Sociology 1–2	6
Elective*		2 to 6
	Total	64

3. PREMEDICAL

The first sixty semester hours of the ninety required for admission to the School of Medicine are undertaken in the Junior College. Premedical students may follow either the Arts and Letters curriculum or the Science curriculum listed above. However, they should note the specific requirements for admission to the School of Medicine. (*See* Admissions, pages 15 and 16.) Each premedical program must be approved by the Premedical Adviser.

B. SCHOOL OF PHARMACY:

The following two-year curriculum prepares for the Bachelor of Science in Pharmacy curriculum in the School of Pharmacy.

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* It is suggested that electives include one of the following courses: Art 11–12, 71–72; Philosophy 51–52, 111–12; Religion 9–10, 59–60.
The student should obtain the advice of his major department as to proper prerequisite and collateral courses for the intended major.
Credit is not given for courses elected in Physical Education or Secretarial Studies.

Students planning to complete the requirements for the degree of Bachelor of Science in Pharmacy (see pages 154–57) in four years should complete nine hours of approved elective work in addition to the Junior College curriculum listed below. This additional work may be taken during the Summer Sessions.

		Semester Hours
English	English 1, 2	6
Science	Botany 1 or 2, Chemistry 11–12, Physics 5–6, Zoology 1 (Freshman year)	21
	Chemistry 151–52 (Sophomore year)	8
Social Studies	Economics 1	3
Professional Courses	Pharmacy 1–2 (Freshman year)	3
	Pharmacy 21–22, 23, 25 (Sophomore year)	14
Physical Education	See pages 49–50 for statement of requirement	4
Elective		5
	Total	64

C. SCHOOL OF EDUCATION:

1. EDUCATION

The following two-year curriculum prepares for the Bachelor of Arts in Education curriculum in the School of Education:

		Semester Hours
English	English 1, 2	6
	English 51–52, 71–72, or 91–92	6
Foreign Language	(French, German, Latin, Russian, or Spanish.) See page 65 for foreign language requirement	12
Physical Education	See pages 49–50 for statement of requirement	4
Science and Mathematics	Two semesters to supplement senior high school courses, selected from: Biology 1–2; Botany 1, 2; Chemistry 3–4, 11–12; Physics 5 and 6 or 7; Zoology 1–2; or Mathematics 3 and 6 or 6 and 12	6 or 8
Social Studies	History 71–72	6
	Economics 1–2; Geography 51, 52; History 39–40; Political Science 9–10; Religion 59–60; or Sociology 1–2. (Those offering for admission two or more acceptable senior high school units in the Social Studies may be exempted from this requirement)	6
Other Courses	Psychology 1 and 22	6
	Speech 1 or 11	3
	Statistics 53	3
Elective		4 to 6
	Total	64

2. HOME ECONOMICS

The following two-year curriculum prepares for the Bachelor of Science in Home Economics curriculum in the School of Education:

		Semester Hours
English	English 1, 2	6
	English 51–52, 71–72, Speech 1, 2 (1, 11)	6
Physical Education	See pages 49–50 for statement of requirement	4
Psychology	Psychology 1, 29	6
Science	Biology 1–2, Chemistry 11–12, Physics 5, 6, 7	6–8
Social Studies*	Economics, History, Political Science, or Sociology	12
Major Prerequisites	Home Economics 1, 22 (Freshman year)	6
	Home Economics 51, 62 (Sophomore year)	6
Academic Electives	(Freshman year)	6
	(Sophomore year)	4–6
	Total	64

3. PHYSICAL EDUCATION FOR MEN

The following two-year curriculum prepares for the Bachelor of Science in Physical Education curriculum in the School of Education:

		Semester Hours
English	English 1, 2	6
Physical Education	1, 2, 11, 12	4
Science	Biology 1–2 or Zoology 1–2 (Freshman year)	6 or 8
Social Studies	History 39–40, 71–72; Political Science 9–10; or Sociology 1–2 (Freshman year)	6
	Economics, History, or Political Science (Sophomore year)	6
Major Prerequisites	Physical Education 43–44, 47; Speech 1 or 11 (Freshman year)	9
	Physical Education 45–46, 49, 50, 58; Psychology 1, 22 (Sophomore year)	18
Elective		7–9
	Total	64

4. PHYSICAL EDUCATION FOR WOMEN

The following two-year curriculum prepares for the Bachelor of Science in Physical Education curriculum in the School of Education:

* Courses are to be selected with the approval of the adviser in the Department of Home Economics.

		Semester Hours
English	English 1, 2	6
	English 51–52, 71–72, or 91–92	6
Physical Education	1, 2, 11, 12	4
Science	Biology 1–2 or Zoology 1–2	6 or 8
Social Studies	History 39–40, 71–72; Political Science 9–10; or Sociology 1–2	6
Major Prerequisites	Physical Education 43–44 (Freshman year)	4
	Physical Education 49, 50, 51–52; Psychology 1, 22 (Sophomore year)	16
Academic Electives	(Each year)	6 or 8
	Total	64

D. SCHOOL OF GOVERNMENT:

1. ACCOUNTING AND BUSINESS ADMINISTRATION

The following two-year curriculum prepares for the Bachelor of Arts in Government curricula in Accounting and in Business Administration in the School of Government:

		Semester Hours
Accounting	Accounting 1–2	6
English	English 1, 2, 11	9
Foreign Language	See page 65 for foreign language requirement	12
Physical Education	See pages 49–50 for statement of requirement	4
Social Studies	Economics 1–2	6
	Political Science 9–10	6
	Speech 1	3
Statistics	Statistics 51, 52	6
Elective*	(Students interested in Foreign Commerce include Geography 51)	12
	Total	64

2. FOREIGN AFFAIRS

The following two-year curriculum prepares for the Bachelor of Arts in Government curriculum in Foreign Affairs in the School of Government:

		Semester Hours
English	English 1, 2	6
Foreign Language	See page 65 for foreign language requirement	12
Mathematics, Science	Biology, Botany, Chemistry, Mathematics, Physics, Statistics, or Zoology	6 to 8

* Credit is not given for courses elected in Physical Education or Secretarial Studies.

Physical Education	See pages 49–50 for statement of requirement	4
Social Studies	Economics 1–2; History 39–40, 71–72; Political Science 9–10	24
Elective*	(To satisfy minimum required credits. Students interested in Foreign Service include Geography 51)	10 to 12
	Total	64

3. BUSINESS AND ECONOMIC STATISTICS

The following two-year curriculum prepares for the Bachelor of Arts in Government curriculum in Business and Economic Statistics in the School of Government:

		Semester Hours
Accounting	Accounting 1–2	6
English	English 1, 2	6
Foreign Language	See page 65 for foreign language requirement	12
Mathematics	Mathematics 20 and prerequisites	3 to 12
Physical Education	See pages 49–50 for statement of requirement	4
Social Studies	Economics 1–2; Philosophy 51–52	12
Statistics	Statistics 51 or 91–92	3 or 6
Elective*		6 to 18
	Total	64

II. VOCATIONAL CURRICULA

In addition to the above curricula, all of which prepare for admission to upper division colleges and schools, the Junior College offers the following two-year terminal courses.

The curricula in Accounting and Secretarial Studies lead to the degree of Associate in Arts. The curricula in Home Economics, Medical Technology—Basic Course, and Physical Sciences lead to the degree of Associate in Science.

1. ACCOUNTING

The required work may be completed in two years on a full-time basis or in three years on a part-time basis, with the approval of the adviser.

		Semester Hours
Accounting	Accounting 1–2, 101, 111, 121–22, 161, 171, 181, 191, 193	33
Business Administration	Business Administration 131	3

* Credit is not given for courses elected in Physical Education or Secretarial Studies.

Economics	Economics 1–2	6
English	English 1, 2	6
Physical Education	See pages 49–50 for statement of requirement	4
Political Science	Political Science 127–28	6
Elective	To be selected with the approval of the adviser	6
	Total	64

2. HOME ECONOMICS

		Semester Hours
English	English 1, 2	6
	English 51–52, 71–72, 91–92, Speech 1, 2 (1, 11)	6
	English 11 or Secretarial Studies 51	3
Home Economics	Home Economics 1, 22, 51, 62	12
Physical Education	See pages 49–50 for statement of requirement	4
Psychology	Psychology 1	3
Secretarial Studies	Secretarial Studies 1, 2	6
Home Economics Elective*		6–12
Elective*		6–12
	Total	64

3. MEDICAL TECHNOLOGY—BASIC COURSE

This course is in preparation for further training toward certification as medical technologist. See pages 116–17 for information concerning the Medical Technologist Course.

		Semester Hours
English	English 1, 2	6
Foreign Language	See page 65 for foreign language requirement	12
Literature or Social Studies	English 51–52, 71–72, 91–92. Classical Languages 71–72, French 51–52, German 51–52, or Spanish 51–52. Economics 1–2, Geography 51, 52, History 39–40, 71–72, Political Science 9–10, or Sociology 1–2	6
Physical Education	See pages 49–50 for statement of requirement	4
Science	Chemistry 11, 12, 21, 22	16
	Zoology 1–2	8
	Bacteriology 112, Zoology 41–42, 138, 145, 156	6
Elective	(Mathematics 3, 6, Physics 5 are recommended)	6
	Total	64

* Courses are to be selected with the approval of the adviser in the Department of Home Economics.

4. PHYSICAL SCIENCES

This curriculum is designed for part-time students who do not wish to extend their collegiate education beyond sixty-four semester hours of work. All other students, interested in the study of physical science should follow the pre-Columbian College Science curriculum.

		Semester Hours
Chemistry	Chemistry 11, 12, 21	12
Civil Engineering	Civil Engineering 25–26	4
English	English 1, 2, 11	9
Mathematics	Mathematics 3, 6, 12, 19, 20	15
Mechanical Engineering	Mechanical Engineering 3, 4	4
Physical Education	See pages 49–50 for statement of requirement	4
Physics	Physics 5, 6, 7, 8, 55	15
Elective	(Speech 1, Economics 1–2 suggested)	1–10
	Total	64

5. SECRETARIAL STUDIES

		Semester Hours
English	English 1, 2	6
	English 51–52, 71–72, 91–92	6
Physical Education	See pages 49–50 for statement of requirement	4
Secretarial Studies*	Secretarial Studies 1, 2, 11, 12, 15, 16, 51, 54	24
Social Studies	Economics 1–2	6
General	Accounting 1	3
	Speech 11	3
Elective	(To be selected with the approval of the adviser)	12
	Total	64

Examinations for Waiving Curriculum Requirements†

A student desiring to omit a required course may take such examination as the department prescribes, and, on passing satisfactorily, he may be relieved of the curriculum requirements in that subject and may qualify for registration in an advanced course. Passing this examination does not entitle the student to any hours of credit toward the degree. A student desiring to take such examinations should make written request of the Dean and pay the required fee at the Office of the Treasurer before the date of the examination specified in the University calendar.

* Qualified students, upon the approval of the adviser or the satisfactory completion of a placement test, may waive Secretarial Studies 1, 11, and 12. Other courses, approved by the adviser, will be substituted.

† This provision does not apply to the premedical student, all of whose required premedical work must be taken in a recognized college of arts and sciences.

Honors

The degree of Associate in Arts or Associate in Science may be conferred "with distinction" upon the student who has a quality-point index of 3.50 or higher, provided that student has been in residence at the University for 30 hours, 15 of which must have been taken in the Junior College at the time the index is calculated.

COLUMBIAN COLLEGE

THE FACULTY AND STAFF OF INSTRUCTION*

Henry Grattan Doyle, A.M., LL.D., Litt.D., *Dean of Columbian College*
Calvin Darlington Linton, Ph.D., *Associate Dean of Columbian College*

Thomas Benjamin Brown, Ph.D., *Professor of Physics*
Henry Grattan Doyle, A.M., LL.D., Litt.D., *Professor of Romance Languages*
Joseph Hyram Roe, Ph.D., *Professor of Biochemistry*
†**Norris Ingersoll Crandall, M.Arch, *Professor of Art***
Robert Whitney Bolwell, Ph.D., *Professor of American Literature*
James Henry Taylor, Ph.D., *Professor of Mathematics*
Elmer Louis Kayser, Ph.D., LL.D., *Professor of European History*
George Gamow, Physics D., *Professor of Theoretical Physics*
Warren Reed West, Ph.D., *Professor of Political Science*
Frank Mark Weida, Ph.D., *Professor of Statistics*
Francis Edgar Johnston, Ph.D., *Professor of Mathematics*
Leland Wilbur Parr, Ph.D., *Professor of Bacteriology*
Benjamin Douglass Van Evera, Ph.D., Sc.D., *Professor of Chemistry*
Mitchell Dreese, Ph.D., *Professor of Educational Psychology*
Merle Irving Protzman, Ph.D., *Professor of Romance Languages*
Florence Marie Mears, Ph.D., *Professor of Mathematics*
Wood Gray, Ph.D., *Professor of American History*
‡**Thelma Hunt, Ph.D., M.D., *Professor of Psychology***
Ira Bowers Hansen, Ph.D., *Professor of Zoology*
Paul William Bowman, Ph.D., *Professor of Biology*
Arthur Edward Burns, Ph.D., *Professor of Economics*
John Withrow Brewer, Ph.D., *Professor of International Law*
Louis Clark Keating, Ph.D., *Professor of Romance Languages*
Paul Kenneth Smith, Ph.D., *Professor of Pharmacology*
Harold Loran Geisert, Ph.D., *Professor of Sociology*
‡Samuel Nathaniel Wrenn, Ph.D., *Professor of Chemistry*
Charles Rudolph Naeser, Ph.D., *Professor of Chemistry*
Howard Maxwell Merriman, Ph.D., *Professor of American Diplomatic History*
Ernest Sewell Shepard, A.M., *Professor of English Literature*

* The President of the University, the Dean of Faculties, the Dean and the Associate Dean of the College, the Registrar of the University, the Director of Admissions of the University, Professors, Adjunct Professors, Associate Professors, and Assistant Professors constitute the Faculty.
† On leave of absence fall semester 1956–57.
‡ On sabbatical leave fall semester 1956–57.

Fred Salisbury Tupper, Ph.D., *Professor of English Literature*
Alan Thomas Deibert, A.M., *Professor of Romance Languages*
Chester Elwood Leese, Ph.D., *Fry Professor of Physiology*
Donald Stevenson Watson, Ph.D., *Professor of Economics*
Myron Law Koenig, Ph.D., *Professor of American History*
Calvin Darlington Linton, Ph.D., *Professor of English Literature*
Angus MacIvor Griffin, Ph.D., *Professor of Bacteriology*
Charles Edward Gauss, Mus.B., Ph.D., *Elton Professor of Philosophy*
Ira Rockwood Telford, Ph.D., *Professor of Anatomy*
Elbridge Colby, Ph.D., *Professor of Journalism*
Donald Chenoweth Kline, B.Arch., M.F.A, *Professor of Art*
Charles William Cole, Ph.D., *Professor of American Literature*
Everett Herschel Johnson, Ph.D., *Professor of Statistics*
George Martin Koehl, A.M., *Professor of Physics*
Lubin Poe Leggette, A.M., *Depew Professor of Speech*
Joseph Richard Sizoo, A.M., S.T.D., D.D., Litt.D., *Milbank Professor of Religion*
Robert Dale Campbell, Ph.D., *Professor of Geography*
John Francis Latimer, Ph.D., *Professor of Classical Languages and Literatures*
*Roderic Hollett Davison, Ph.D., *Professor of European History*
Calvin Weir Pettit, Ph.D., *Professor of Speech*
Wolfgang Herbert Kraus, Dr. Jur., S.J.D., *Professor of Political Science*
Robert Corbin Vincent, Ph.D., *Professor of Chemistry*
Edith Elizabeth Mortensen, Ph.D., *Professor of Zoology*
Edward Campion Acheson, Ph.D., *Associate Professor of Finance*
Antonio Alonso, A.M., *Associate Professor of Spanish*
Gretchen Louisa Rogers, Ph.D., *Associate Professor of German*
Wolfram Karl Legner, Ph.D., *Associate Professor of German*
Curtis Edward Tuthill, Ph.D., *Associate Professor of Psychology*
George Francis Henigan, Jr., Ph.M., *Associate Professor of Speech*
Robert Hamilton Moore, Ph.D., *Associate Professor of English Composition*
Edwin Lockwood Stevens, A.M., *Associate Professor of Speech*
Reuben Esselstyn Wood, Ph.D., *Associate Professor of Chemistry*
†Nels David Nelson, Ph.D., *Associate Professor of Mathematics*
Sam Clark Munson, Ph.D., *Associate Professor of Biology*
James Harold Coberly, Ph.D., *Associate Professor of American Literature*
Carr Bartleson Lavell, A.M., *Associate Professor of Sociology*
William Frederick Sager, Ph.D., *Associate Professor of Chemistry*
James Norman Mosél, A.M., *Associate Professor of Psychology*

* On sabbatical leave fall semester 1956–57
† On sabbatical leave spring semester 1956–57.

Willard Edmund Caldwell, Ph.D., *Associate Professor of Psychology*
Rafael Supervía, Doctor en Derecho, *Associate Professor of Spanish*
William Columbus Davis, Ph.D., *Associate Professor of Latin American History*
Clifton Earl Olmstead, A.B., Th.D., *Associate Professor of Religion*
Lewis Slack, Ph.D., *Associate Professor of Physics*
Ronald Bettes Thompson, Ph.D., *Associate Professor of European History*
Philip Highfill, Jr., Ph.D., *Associate Professor of English Literature*
John Gage Allee, Jr., Ph.D., *Associate Professor of English*
Theodore Peter Perros, Ph.D., *Associate Professor of Chemistry*
Bernard Hayman Fox, Ph.D., *Assistant Professor of Psychology*
Richard Catlin Haskett, Ph.D., *Assistant Professor of American History*
Howard Rowland Ludden, A.M., *Assistant Professor of Political Science*
Robert Crumpton Willson, A.B., *Assistant Professor of Journalism*
Walter David Fackler, A.B., *Assistant Professor of Economics*
Helen Zhemchuzhnaya Yakobson, B.S., *Assistant Professor of Russian*
Wilson Emerson Schmidt, Ph.D., *Assistant Professor of Economics*
Harland Walter Westermann, A.M., *Assistant Professor of Geography*
Alton Harold Desmond, Ph.D., *Assistant Professor of Zoology*
William Edward Schmidt, Ph.D., *Assistant Professor of Chemistry*
John Gilbert Palmer, Ph.D., *Assistant Professor of Botany*
Richard Ernest Murphy, A.M., *Assistant Professor of Geography*
Edward Felix Turner, Jr., Ph.D., *Assistant Professor of Physics*
John Palmer Reesing, Jr., Ph.D., *Assistant Professor of English*
John William Skinner, Ph.D., *Assistant Professor of Economics*
Chester Hayden McCall, A.M., *Assistant Professor of Statistics*

COMMITTEES •

The Dean's Council †

1957

Merle Irving Protzman
James Harold Coberly

1958

Wilson Emerson Schmidt
William Edward Schmidt

1959

Nels David Nelson
Lewis Slack

• The President of the University and the Dean and Associate Dean of Columbian College are members ex officio of all committees.
† Elected by the Faculty.

COMMITTEE ON ADMISSION AND ADVANCED STANDING

Calvin Darlington Linton, *Chairman*
Edith Elizabeth Mortensen, *Secretary*
Alan Thomas Deibert — Charles William Cole
Edward Felix Turner, Jr.

COMMITTEE ON THE USE OF CORRECT ENGLISH

Averett Howard, *Chairman*
George Francis Henigan, Jr. — Robert Hamilton Moore
Muriel Hope McClanahan — Robert Crumpton Willson

COMMITTEE ON SCHOLARSHIP

Florence Marie Mears, *Chairman*
Samuel Nathaniel Wrenn — Howard Maxwell Merriman
Antonio Alonso — John Palmer Reesing, Jr.

COMMITTEE ON STUDIES

The Dean of the College, *Chairman*
Fred Salisbury Tupper — Everett Herschel Johnson
Lubin Poe Leggette — Edith Elizabeth Mortensen

GENERAL INFORMATION

INTRODUCTORY

Columbian College was founded in 1821. James Monroe, then President of the United States, aided in obtaining the charter from Congress which established "The Columbian College in the District of Columbia" for the "sole and exclusive purpose of educating youth in the English, learned and foreign languages, the liberal arts, sciences and literature", with full power to confer all degrees "usually granted and conferred in colleges".

In 1930, when the Junior College was established, the name "Columbian College" was bestowed upon the senior college of liberal arts.

THE COLUMBIAN COLLEGE PROGRAM

Columbian College is that branch of the University which grants the Bachelor's and Master's degrees in the liberal arts. Its purpose is to enable the student to develop harmoniously both his particular abilities and his general awareness as a human being. It demands of the student

a thorough acquaintance with one major area of learning and at the same time an understanding of how that field of specialization fits into the larger context of the scientific, social, and moral problems which confront modern man. It stresses not merely expertness but that broadly enlightened expertness which encourages its graduates to grow through the years in ability and wisdom.

The program is a contemporary application of the historic liberal arts tradition. A particular vitality and meaning are imparted to it by the fact that The George Washington University is situated in the cosmopolitan capital city of a nation to which, increasingly, the world looks for leadership. Here, uniquely, the liberal arts tradition is put to the test of contact with reality.

REGULATIONS

Students in Columbian College are subject to, and are expected to familiarize themselves with, the regulations regarding ADMISSION, REGISTRATION, FEES AND FINANCES *stated on pages 12–27, and the University regulations stated on pages 46–54.*

PREREQUISITES

It is assumed that a student entering Columbian College has met the requirements of the Junior College under the *Arts and Letters* curriculum or the *Science* curriculum. (See the Junior College section of the CATALOGUE.) Following is a summary of these prerequisites:

The *Arts and Letters* curriculum: (1) English composition (6 semester hours) and an additional year course (6 semester hours) in English, American, European, Classical, or any other foreign literature. (2) Two college years (at least 12 semester hours) of a single foreign language or the equivalent (see foreign-language requirement, page 65), are required. A transfer student who has had foreign-language courses in another institution meeting 4 or 5 times a week may have acquired as much as 12 semester hours in a foreign language without having taken four semesters (two full years). Such a student is required to take additional work here in the same language until he has completed four semesters (or an equivalent combination of high school years and college semesters). (3) At least one year (6 semester hours) in social studies, chosen from first-group courses in History, Political Science, Economics, Sociology, or Geography, is required. (4) At least one year (6 or 8 semester hours) of a laboratory science (Biology, Botany, Chemistry, Physics, or Zoology) is required.

The remaining hours of the Junior College program (roughly a minimum of 22 to 24 hours) should be devoted to the prerequisite courses

required by the prospective major department (as stated following the departmental staff in the courses of instruction section of the CATALOGUE) or recommended by the advisers in the field-of-study major (see pamphlets prepared by the respective advisers), together with appropriate electives. Electives in Art, Philosophy, or Religion are recommended.

The *Science* curriculum requirements in English are the same as those of the Arts and Letters curriculum. A year course of a social study is required. The foreign-language requirement is the same as for the Arts and Letters curriculum, except that French or German is specified. At least 6 semester hours in Mathematics must be taken; additional work in Mathematics is required of prospective majors in Chemistry or Physics. In science, the student should take courses in both biological and physical sciences, bearing in mind the prerequisites stated by the department under which he expects to major as well as specified prerequisites in certain departments (such as Mathematics and Chemistry for majors in Physics, or Mathematics and Physics for majors in Chemistry.)

A transfer student admitted to Columbian College with deficiencies in freshman or sophomore work (whether in amount or in distribution of courses), corresponding to the programs outlined above, is required to begin to make up such deficiencies immediately upon admission to Columbian College, and to carry courses for the purpose each semester until all the general education requirements described above are satisfied. Students transferring from the School of Government must complete pre-Columbian College requirements in science and in literature as prescribed in the Arts and Letters curriculum. Electives in Art, Philosophy, or Religion are recommended.

AMOUNT OF WORK

A full-time student who is not on probation may take ordinarily not more than seventeen semester hours. A student employed more than twenty-four hours a week, who is not on probation, may take not more than ten semester hours.

A full-time student whose quality-point index is 3.50 or higher may take not more than nineteen semester hours. An employed student who meets the same standard may take not more than twelve semester hours.

A student previously unemployed who accepts employment subsequent to registration or at any time during a semester is required to report that fact immediately to the Dean, in order that adjustments in schedule may be made, if necessary, to bring his program within the Faculty's limitations upon the amount of work to be carried by an employed student.

Attendance

The student is held responsible for all the work of the courses in which he is registered, and all absences must be excused by the instructor in charge before provision is made for the student to make up the work missed. Excessive absence in any course will lead to loss of credit in that course, even though other requirements, such as tests, term papers, and examinations are met.

Classification of Students

A student who has completed less than thirty semester hours in Columbian College, and who has registered his major at the Office of the Registrar is classed as a *junior*. A student who has completed thirty semester hours in Columbian College, including at least one course in his major, is classed as a *senior*. A student who has satisfactorily completed the work for the Bachelor's degree, and whose program of study has been approved and filed in the Office of the Registrar, is classed as a ***master in course.***

Independent Study Plan

Under the independent study plan a student of demonstrated capacity, with special interest in the subject matter of a course, may be permitted to undertake independent study under the personal direction of an instructor, in accordance with the rules of the division in which the subject falls. Credit under this plan is limited to the specific course-credits as designated in the list of courses of instruction in the Catalogue.

Correspondence and Home-Study Courses

No credit is given for work done by correspondence or in home-study courses.

THE BACHELOR'S DEGREES

Upon the satisfactory completion of the undergraduate requirements of Columbian College, the degree of Bachelor of Arts or Bachelor of Science is conferred.

In cooperation with the School of Medicine a seven-year curriculum leading to the combined degrees of Bachelor of Arts and Doctor of Medicine is offered.

REQUIREMENTS FOR THE DEGREES

Residence

For the residence requirement, see pages 50–51. Students intending to transfer to Columbian College from a non degree-granting division of the University should note specifically the regulation concerning transfer within the University, see pages 48 and 49.

Scholarship

The system of grading and of computing scholarship is described in detail on pages 46 and 47.

In order to graduate, a student must have a general quality-point index of at least 2.00. In addition, the student with a Departmental Major must have a quality-point index of at least 2.50 in his major subject. Grades in courses taken at other institutions are not considered in computing the quality-point index. The student with a Field-of-Study Major meets the qualitative requirement by passing the Major Examination.

In computing the quality-point index in the major, all second-group and third-group courses in the major field taken at The George Washington University are included, even though minimum requirements for the major may have been exceeded, except when registration for graduate credit is approved. Grades received in first-group courses are not considered.

Probation.—A student must maintain a quality-point index of at least 2.00, or be placed on probation. A student remains on probation as long as his quality-point index is below 2.00, or until his probation is removed by the Committee on Scholarship.

Suspension.—A student who has a quality-point index below 1.50 or who is placed on probation for a third semester, whether successive or after an interval, is suspended.

A student suspended for poor scholarship may apply for readmission after an interval of one calendar year. He must then submit evidence to the Committee on Admission and Advanced Standing that during his absence from the University he has so conducted himself as to indicate that he will profit by readmission. A student suspended twice for poor scholarship will not be readmitted.

The foregoing scholarship rules are applied to a student with a limited schedule only when he has undertaken a minimum of fifteen semester hours.

Curriculum Requirements

The curriculum requirements for the Bachelor's degrees include at least sixty semester hours beyond the requirements of the Junior College

(the curriculum in *Arts and Letters* or in *Science*) and the satisfactory completion of the major. Each program must be approved by the major adviser and by the Dean.

At least twenty-four semester hours of the last sixty semester hours counted towards the Bachelor's degree must be taken in subjects* not included in the major field or department. The student should consult his major adviser at each registration regarding the inclusion in his program of suitably distributed electives.

Except for students registered for the combined degrees of Bachelor of Arts and Doctor of Medicine, not more than twelve semester hours of professional courses may be included in the one hundred and twenty-four semester hours required for the Bachelor's degrees in Columbian College. Columbian College students electing professional courses under this rule must obtain the approval, in advance, of the Dean of Columbian College. Ordinarily courses in Physical Education and technical courses in Education will not be approved for credit toward a degree in Columbian College.

After selecting a curriculum, a student may not change to another except by permission of the Dean and on condition that he fulfill the requirements of the curriculum to which he changes which are in effect at the time the change is approved by the Dean.

Each student is required to select and file with the Registrar a choice of major upon entering Columbian College. He may change the major only with the consent of the Dean and of the department or division concerned, and must meet the requirements for the new major which are in effect at the time the change is approved by the Dean.

First-group courses may be required as prerequisites to undergraduate-major programs, but because of their introductory character may not be counted as part of such programs. (See "Explanation of Course Numbers".)

Students transferring from other institutions or from other schools, colleges, or divisions in this University with major requirements wholly or substantially met will, nevertheless, be required to complete satisfactorily at least twelve semester hours of approved work in the major field in Columbian College in order to receive a Bachelor's degree. This work will count as part of the minimum residence requirement.

Examinations for Waiving Curriculum Requirements.—A student desiring to omit a required or prerequisite course may take such examination as the department prescribes, and, on passing satisfactorily, he may be relieved of the curriculum or prerequisite requirement in that subject and may qualify for registration in an advanced course. Passing of this

* Art, Biology, Botany, Chemistry, Classical Languages and Literatures, Economics, English, Geography, Geology, Germanic Languages and Literatures, History, Journalism, Mathematics, Philosophy, Physics, Political Science, Psychology, Religion, Romance Languages and Literatures, Slavic Languages and Literatures, Sociology, Speech, Statistics, Zoology.

examination shall not entitle him to any credit toward a degree. A student desiring to take such examinations should make written request of the Dean and pay the required fee at the Office of the Treasurer before the date of the examination specified in the University calendar.

Use of Correct English.—Any student whose English in any course whatever is deemed unsatisfactory may be reported by the instructor to the Dean and to the Committee on the Use of Correct English. The Chairman of the Committee may assign supplementary work, without academic credit, varying in amount with the needs of the student. If the work prescribed is equivalent to a course, the regular tuition fee is charged. The granting of a degree may be delayed by failure to make up any such deficiency in English to the satisfaction of the Committee and the Dean.

Graduate Record Examinations

During the final semester of the senior year students in Columbian College are required to take the following Graduate Record Examinations: the Aptitude Test, which provides a measure of general scholastic ability at the graduate level; and Area Tests (achievement), which measure breadth of knowledge and understanding in three broad areas of the liberal arts: Natural Science, Social Science, and the Humanities. (For further information concerning the Graduate Record Examinations, see page 51.)

Bachelor of Arts

The work of the junior and senior years, including a major in one of the following major fields, must be approved by the major adviser and by the Dean.

Major Fields.—American Thought and Civilization, Art ((1) Art History and Theory or (2) Drawing, Painting, Sculpture, and Commercial Art), Biology, Botany, Chemistry, Economics, English Literature, French Literature, Geography, Geology, Germanic Languages and Literatures, History, Journalism (News-Editorial or Public Relations), Latin American Civilization, Mathematics, Philosophy, Physics, Political Science, Psychology, Religion, Sociology, Spanish American Literature, Spanish Literature, Speech (Speech or Dramatic Art), Statistics, Zoology.

Combined Degrees of Bachelor of Arts and Doctor of Medicine.—A candidate for the combined degrees of Bachelor of Arts and Doctor of Medicine must: (1) complete the Medical School entrance requirements (see pages 15–16); (2) fulfill the Junior College Arts and Letters requirements (see page 66); (3) fulfill the Columbian College residence requirement of at least thirty semester hours; (4) obtain the approval of

the Dean of Columbian College at the time of entering the School of Medicine; (5) obtain the recommendation of the Dean of the School of Medicine at the completion of all prescribed courses in the first year of the School of Medicine, at which time the degree of Bachelor of Arts will be conferred (professional work taken at another institution will not satisfy the major requirement for the combined degrees); (6) maintain throughout the entire course the scholarship level required for graduation.

Bachelor of Science

The work of the junior and senior years, including a major in one of the following sciences must be approved by the major department or division and by the Dean.

Biological Sciences	*Physical Sciences*
Biology	Chemistry
Botany	Mathematics
Zoology	Physics
	Statistics

THE UNDERGRADUATE MAJOR*

There are two types of undergraduate majors: the field-of-study major and the departmental major.

The Field-of-Study Major

Each Field-of-Study Major covers a carefully worked out field of coordinated study and is under the supervision of the appropriate department and the Columbian College Committee on Studies.

The *Field-of-Study Major* requires no specific number of semester hours, no specific program of courses, and no specific quality-point index for the major, although the student is required to meet the over-all general requirements for the degree (at least 124 semester hours with a quality-point index of at least 2.00). The Major Examination in the Field-of-Study Major replaces all of the traditional quantitative and qualitative requirements for a major. Ability to pass the Major Examination is assumed to be a convincing demonstration that the student possesses the breadth, depth, and quality of knowledge of his major usually defined in terms of semester hours, courses, grades, and a better-than-average quality-point index. A pamphlet prepared under the direction of the adviser in the field of study and obtainable either from the adviser or

* For a complete description of the undergraduate major, see the special bulletin.

from the Office of the Dean of Columbian College provides the information needed by the prospective student, who should place himself under the direction of the appropriate adviser immediately upon completing Junior College work and beginning his junior year (the first senior-college year) in Columbian College.

The Field-of-Study Major places special emphasis on the intellectual development of the individual student. Programs in the same major may vary, depending upon the individual student's background, previous study, reading habits, and aptitudes. The student is expected to consult his adviser frequently, and the special proseminar offered in the field gives him further opportunity for individual advice and direction in pursuing a program especially adapted to his needs and abilities. A close student-adviser relationship is essential for the student's success under the Feld-of-Study Major plan.

The following Field-of-Study Majors are offered: (1) American Thought and Civilization, (2) Biology, (3) English Literature, (4) French Literature, (5) History, (6) Latin American Civilization, (7) Philosophy, (8) Spanish American Literature, (9) Spanish Literature, (10) Statistics, (11) Zoology.

The major in Biology extends broadly over the work of its division and those in American Thought and Civilization and in Latin American Civilization involve studies in two divisions, those of Languages and Literatures and of Social Sciences. The other Field-of-Study Majors, with the exception of the major in Spanish American Literature, replace departmental majors in their respective fields. A candidate for a Bachelor's degree with a major in Biology, English Literature, French Literature, History, Philosophy, Spanish American Literature, Spanish Literature, Statistics, or Zoology must elect a Field-of-Study Major.

Proseminar in the Major

For the convenience of the student a proseminar is offered in each field of study. This course, planned and administered by the professor or adviser responsible for the field, will advise, guide, and instruct the student in his reading, study, and laboratory exercises in order to assist him in gaining a coordinated knowledge of his field. It is a presentation of the content and methods of the major field as a whole through the organization and coordination of the knowledge obtained in the various formal courses in the major subject and of material not usually included in such courses. This course is not required. Six semester hours, but no qualitative grade, may be assigned. When registered in this course, the student will have the privilege of visiting, subject to the approval of the instructor, any other appropriate course offered in the College. (Regular attendance in a course, either for credit or as an auditor, requires

registration and payment of tuition.) Proseminars are open only to the student who has been accepted as a candidate under that specific major.

The Major Examination

The Major Examination will normally be taken by the student at the close of the senior year; in the case of a student on a limited schedule, the Major Examination may be taken not earlier than one calendar year before graduation. A student who fails to pass a Major Examination may, at the discretion of the Columbian College Committee on Studies, be reexamined at a later regular major-examination period. The educational Committee on Studies will have general supervision of the preparation, reading, and grading of Major Examinations. Major Examinations will be held each semester on dates fixed by the respective educational committees, but in no case later than January 15 for the fall semester, May 15 for the spring semester, and August 7 for the summer sessions.

Departmental Majors

Departmental Majors, unlike Field-of-Study Majors, are specifically defined in terms of credit hours, required courses, and the attainment of a quality-point index of at least 2.50 in all second-group courses taken in the major field. The minimum specific requirements for Departmental Majors are listed below the staff of instruction of the department concerned in the section of the Catalogue devoted to courses of instruction. The Executive Officer of the Department, or designated departmental adviser, should be consulted at registration concerning the student's program of courses; and the entire program, including electives, must be approved by the Department. The student is also expected to consult the Executive Officer or adviser in all matters affecting his program of studies, such as changes, substitutions, or withdrawals, and especially concerning his progress in his courses. As far as possible the close student-adviser relationship developed in the Field-of-Study Major will be cultivated also in Departmental Majors.

Until further notice Departmental Majors will be offered in the following: Art ((1) Art History and Theory or (2) Drawing, Painting, Sculpture, and Commercial Art), Botany, Chemistry, Economics, Geography, Geology, Germanic Languages and Literatures, Journalism (News-Editorial or Public Relations), Mathematics, Physics, Political Science, Psychology, Religion, Sociology, and Speech ((1) Speech or (2) Dramatic Art).

THE MASTER'S DEGREES

Upon the satisfactory completion of the graduate requirements of Columbian College, the degree of Master of Arts or Master of Science is conferred.

Definition of the Master's Work

The study leading to the degree of Master of Arts or Master of Science is a comprehensive survey of a field of knowledge. It is a continuation of the work of the student's undergraduate major and involves a greater acquaintance with scholarly method.

The student must satisfy certain minimum requirements as to previous preparation, residence, ability to read an approved modern foreign (European) language, and courses taken; but these requirements, while essential, are regarded primarily as qualifying measures. The student's knowledge of his field, as demonstrated by his thesis and by the results of his Master's Examination (together with such other examination involving special skills or techniques as the department or the Columbian College Committee on Studies may require), is the basis upon which the Master's degree is conferred.

Master of Arts

Graduate work leading to the degree of Master of Arts is offered in the following fields:

American Literary and Cultural History, Bacteriology, Biochemistry, Biology, Botany, Chemistry, Chemotherapy, Economics, English and American Literature, English Literature, French Literature, Geography, Geology, Germanic Languages and Literatures, History, Latin American Civilization, Mathematics, Pharmacology, Philosophy, Physics, Physiology, Political Science, Psychology, Sociology, Spanish American Literature, Spanish Literature, Statistics, Zoology.

Special programs involving coordinated work in two or more departments may be arranged with the approval of the departments concerned and the Columbian College Committee on Studies.

Master of Science

Graduate work leading to the degree of Master of Science is offered in the following fields:

Anatomy, Bacteriology, Biochemistry, Biology, Botany, Chemistry, Chemotherapy, Mathematics, Pharmacology, Physics, Physiology, Psychology, Statistics, Zoology.

Special programs involving coordinated work in two or more departments may be arranged with the approval of the departments concerned and the Columbian College Committee on Studies.

REQUIREMENTS FOR THE DEGREES

Residence

An academic year of residence in Columbian College is required, i.e., completion of a minimum of thirty semester hours of work including the thesis, which is counted as the equivalent of six semester hours of course work. Summer work may be counted in residence, but in no case may the period of residence aggregate less than twenty-seven weeks. Not more than twelve semester hours (which must be approved in advance by the Dean of Columbian College) may be taken in another school or division of this University, and such work may not be counted toward both a degree in that school or division and the Master's degree in Columbian College. *No part of the minimum requirement may be taken elsewhere.* All work for the degree of Master of Arts or Master of Science must be completed within a maximum of three years, unless the Dean's Council considers the circumstances so unusual as to justify an extension of time.

Scholarship

A Master's candidate must attain the grade of "Ex." (excellent) in at least six semester hours of the course requirements for the degree in order to receive the Master's degree.

A student whose scholarship is unsatisfactory may be suspended by the Dean upon recommendation of the department under which the student is working. A Master's candidate who accumulates nine semester hours or more of "Unsat." (including grades of "C" or lower in prerequisite courses) will be automatically suspended. Regarding the system of grading, see pages 46 and 47.

Program of Studies

The student's program of studies must be outlined in detail at the beginning of his work, in triplicate, on forms available at the Office of the Dean. Each program is subject to the approval of the department and the appropriate member of the Columbian College Committee on Studies. The program may be revised as the occasion requires, but any change necessitates a repetition of the procedures just described.

The candidate for the Master's degree ordinarily may specialize exclusively in the field of his choice. Any student, however, whose under-

graduate training does not include at least one full year of work in each of the following areas of study: (1) mathematics or science (with or without laboratory), (2) social science, and (3) the humanities (literature, philosophy, art, music, or religion), must make up this deficiency in his general education before being admitted to candidacy for Master of Arts degree. This last provision does not apply to candidates for the Master of Science degree.

Courses numbered from 1 to 100 may not be credited toward the Master's degrees, but may in certain instances be required as a basis for advanced work. At least six semester hours of the course work required for the Master's degree must be taken in courses numbered over 200. Courses numbered over 100 may be credited toward the degree, provided the completion of additional work has been certified by the appropriate officer of instruction. (See "Explanation of Course Numbers".)

A student who expects to continue his studies for the degree of Doctor of Philosophy after receiving the Master's degree is strongly advised so to plan his program from the beginning that work for the lower degree may help to prepare him for the higher.

Foreign Language Requirement

Before being admitted to candidacy the student must show that he has a reading knowledge (certified by the appropriate foreign-language department) of at least one modern foreign (European) language, selected by the division under which he is studying. A student whose field is a modern foreign language or literature may not offer that language in satisfaction of the reading-knowledge requirement. Any Master's candidate who chooses to meet the Master's language requirement in French, German, or Spanish and has not passed the French, German, or Spanish foreign language examination by the end of fifteen attempted semester hours must register for French 49, German 49, or Spanish 49 as part of his next registration. The Master's reading examinations will be given at the first class meeting of French 49, German 49, and Spanish 49, and again at the end of the courses. These examinations are open to all Master's candidates, whether enrolled in the courses or not; however, a candidate not enrolled who expects to present himself for any of the regularly scheduled examinations should notify the Dean at least a week in advance. Those enrolled in French 49, German 49, or Spanish 49 who pass the first examination are excused from the course and will receive a refund of tuition. Students who expect to take a reading examination in any approved language other than French, Spanish, or German should notify the Dean at the time of registration.

Admission to Candidacy

A student must be admitted to candidacy before he begins the last half of his work for the Master's degree, i.e., not later than the completion of fifteen semester hours of degree courses. Application for admission to candidacy is made on a form obtained at the Office of the Dean, and must be approved by the appropriate representative of the department or division and by the Dean. If a prospective candidate, in his previous academic work, has not substantially satisfied the prerequisites for the Master's degree, including the undergraduate major as defined by the appropriate department committee, he will not be admitted to candidacy until such deficiency has been made up. He may make up his deficiencies by electing appropriate courses in addition to those counted toward his degree.

The Master's Thesis

The thesis may be of a research, expository, critical, or creative type. The main purpose of a Master's thesis is to demonstrate the student's ability to make independent use of the information and training acquired through his other disciplines, and to furnish objective evidence of his constructive powers in his chosen field. Registration for the thesis must be no later than the beginning of the final year of preparation, unless the professor in charge of the thesis permits registration at the beginning of the final semester. The choice of the thesis subject must be approved by the professor in charge of the student's field and recorded in the Office of the Registrar by the date announced in the University calendar. Registration for the thesis is ordinarily made on the basis of three hours for each of two successive semesters. In exceptional cases, and with the approval of the professor in charge of the thesis, the student may register for the entire six hours during a single semester. The typewritten thesis in its final form must be submitted by the student for the approval of the professor in charge of the student's field and of the appropriate committee, not later than the date announced in the University calendar. Requirements regarding the form of the thesis are stated on pages 51–52, and additional information will be supplied by the Dean.

Payment of tuition for the thesis entitles the candidate, during the academic year of registration, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished an additional successive academic year may be granted without further tuition payment. If the preparation of the thesis extends beyond the two-year period the student must register for it again, and pay tuition on the same basis as for a repeated course.

The Master's Examination

In addition to such other examinations as may be required, the candidate must pass a general written examination on the major subject. Examinations will be held on dates fixed by the department or committee, but in no case later than January 15 for the fall semester, May 15 for the spring semester, and August 7 for the summer sessions. The provisions of the field-of-study plan for undergraduate majors which concern the general examination for the major also apply to the Master's Examination. A candidate who fails to pass the Master's Examination may, in exceptional circumstances and with the specific approval of the Columbian College Committee on Studies, repeat the examination, but only after the lapse of one semester. If he fails a second time, no further opportunity to take the examination will be permitted.

THE GRADUATE COUNCIL

Robert Whitney Bolwell, Ph.D., *Chairman of the Graduate Council*

MEMBERS OF THE COUNCIL*

Thomas Benjamin Brown, Ph.D., *Professor of Physics*
Henry Grattan Doyle, A.M., LL.D., Litt.D., *Professor of Romance Languages*
Charles Sager Collier, A.B., LL.B., S.J.D., *Professor of Law*
Joseph Hyram Roe, Ph.D., *Professor of Biochemistry*
Robert Whitney Bolwell, Ph.D., *Professor of American Literature*
James Henry Taylor, Ph.D., *Professor of Mathematics*
Elmer Louis Kayser, Ph.D., LL.D., *Professor of European History*
George Gamow, Physics D., *Professor of Theoretical Physics*
Warren Reed West, Ph.D., *Professor of Political Science*
Frank Mark Weida, Ph.D., *Professor of Statistics*
Francis Edgar Johnston, Ph.D., *Professor of Mathematics*
Leland Wilbur Parr, Ph.D., *Professor of Bacteriology*
Benjamin Douglass Van Evera, Ph.D., Sc.D., *Professor of Chemistry*
Mitchell Dreese, Ph.D., *Professor of Educational Psychology*
Winfred Overholser, A.B., M.D., Sc.D., *Professor of Psychiatry*
Merle Irving Protzman, Ph.D., *Professor of Romance Languages*
Ralph Dale Kennedy, Ph.D., *Professor of Accounting*
Florence Marie Mears, Ph.D., *Professor of Mathematics*
Wood Gray, Ph.D., *Professor of American History*
†Thelma Hunt, Ph.D., M.D., *Professor of Psychology*
Ira Bowers Hansen, Ph.D., *Professor of Zoology*
Paul William Bowman, Ph.D., *Professor of Biology*
Arthur Edward Burns, Ph.D., *Professor of Economics*
John Withrow Brewer, Ph.D., *Professor of International Law*
Louis Clark Keating, Ph.D., *Professor of Romance Languages*
Paul Kenneth Smith, Ph.D., *Professor of Pharmacology*
†Samuel Nathaniel Wrenn, Ph.D., *Professor of Chemistry*
Charles Rudolph Naeser, Ph.D., *Professor of Chemistry*
Howard Maxwell Merriman, Ph.D., *Professor of American Diplomatic History*
Fred Salisbury Tupper, Ph.D., *Professor of English Literature*
Chester Elwood Leese, Ph.D., *Fry Professor of Physiology*

* The President of the University, the Dean of Faculties, and the Registrar of the University are members of the Council.

† On sabbatical leave fall semester 1956–57.

Donald Stevenson Watson, Ph.D., *Professor of Economics*
Angus MacIvor Griffin, Ph.D., *Professor of Bacteriology*
Carleton Raymond Treadwell, Ph.D., *Professor of Biochemistry*
Ira Rockwood Telford, Ph.D., *Professor of Anatomy*
Robert Dale Campbell, Ph.D., *Professor of Geography*
*Roderic Hollett Davison, Ph.D., *Professor of European History*
Wolfgang Herbert Kraus, Dr.Jur., S.J.D., *Professor of Political Science*
Antonio Alonso, A.M., *Associate Professor of Spanish*
Curtis Edward Tuthill, Ph.D., *Associate Professor of Psychology*
Reuben Esselstyn Wood, Ph.D., *Associate Professor of Chemistry*
Sam Clark Munson, Ph.D., *Associate Professor of Biology*
Mary Louise Robbins, Ph.D., *Associate Professor of Bacteriology*
William Frederick Sager, Ph.D., *Associate Professor of Chemistry*
Harold George Mandel, Ph.D., *Associate Professor of Pharmacology*
Don Carlos Faith, Ph.D., *Associate Professor of Educational Psychology*
William Columbus Davis, Ph.D., *Associate Professor of Latin American History*
James Norman Mosél, A.M., *Associate Professor of Psychology*
Ronald Bettes Thompson, Ph.D., *Associate Professor of European History*
Bernard Hayman Fox, Ph.D., *Assistant Professor of Psychology*
John Gilbert Palmer, Ph.D., *Assistant Professor of Botany*

Consultants in Research

Samuel Jacob Ajl, Ph.D., *Assistant Chief, Department of Bacteriology, Communicable Diseases Division, Army Medical Service Graduate School, Walter Reed Army Medical Center;* Bacterial Physiology and Nutrition

Joseph William Ballantine, A.B., LL.D., *Consultant, Brookings Institution;* The Far East . .

George McSpadden Briggs, Ph.D., *Chief, Nutrition Unit, Laboratory of Biochemistry and Nutrition, National Institute of Arthritis and Metabolic Diseases;* Animal Nutrition

Bernard Beryl Brodie, Ph.D., *Chief, Laboratory of Chemical Pharmacology, National Heart Institute;* Biochemical Detoxication

Dean Burk, Ph.D., *Head, Cytochemistry Unit, National Cancer Institute;* Tissue Respiration in Biochemistry

Robert Watkins Clarke, Ph.D., *Chief, Department of Surgical Physiology, Army Medical Service Graduate School, Walter Reed Army Medical Center;* Hemo-Dynamics

Gerhard Colm, Dr. rer. pol., *Chief Economist, National Planning Association;* Public Finance; National Income

* On sabbatical leave fall semester 1956–57.

François Naftali Frenkiel, Ph.D., *Physicist, Applied Physics Laboratory, The Johns Hopkins University;* Aerodynamics

Paul Simon Galtsoff, Ph.D., *Director, Shellfish Laboratory, Fish and Wildlife Service, United States Department of the Interior;* Invertebrate Zoology

Fred Latimer Hadsel, Ph.D., *Office of German and Austrian Affairs, Division of German Political Affairs, United States Department of State;* International Politics and Organization

Solomon Kullback, Ph.D., *Chief, Research and Development Division, United States Department of Defense;* Statistics: Multivariate Analysis

Ladislaus Laszlo Marton, Ph.D., *Physicist, Atomic Physics, Electronics Division, National Bureau of Standards;* Electron Optics

John Rudolph Pellam, Ph.D., *Acting Chief, Cryogenics Section, Division of Heat and Power, National Bureau of Standards;* Low Temperature Studies

Jacques Jacobus Polak, Ph.D., *Deputy Director, Research Department, International Monetary Fund;* International Economics

Sanford Morris Rosenthal, M.D., *Chief, Section on Pharmacology and Toxicology, National Institute of Arthritis and Metabolic Diseases;* Cardiovascular Shock

Waldo Lasalle Schmitt, Ph.D., *Head Curator of Zoology, United States National Museum;* Invertebrate Zoology: Crustacea

Leonard Peter Schultz, Ph.D., *Curator of Fishes, United States National Museum;* Vertebrate Zoology: Ichthyology

Lyman Bradford Smith, Ph.D., *Associate Curator, Division of Phanerogams, Department of Botany, Smithsonian Institution;* Taxonomy

Sidney Udenfriend, Ph.D., *Biochemist, National Heart Institute;* Amino Acid Metabolism

Erwin Paul Vollmer, Ph.D., *Research Physiologist, Naval Medical Research Institute;* Endocrinology

Henry Welch, Ph.D., *Director, Division of Antibiotics, Food and Drug Administration, Department of Health, Education, and Welfare;* Antibiotics

Willard Hull Wright, D.V.M., Ph.D., *Scientist Director, United States Public Health Service; Chief, Laboratory of Tropical Diseases, National Microbiological Institute;* Parasitology

Ralph Aubrey Young, M.B.A., Ph.D., *Director, Division of Research and Statistics, Board of Governors, Federal Reserve System;* International Finance

GENERAL INFORMATION

INTRODUCTORY

The Graduate Council offers a program of advanced study and research leading only to the degree of Doctor of Philosophy. It was established in 1930 to replace the Graduate School which had formerly administered work for the Master's as well as the Doctor's degrees. The Graduate Council provides a doctoral discipline which moves freely across administrative lines dividing departments of instruction or fields of study. It gives personal supervision to a limited number of students, each of whom has his own consultative committee, examinations, and research direction.

FIELDS OF RESEARCH

The following fields of research have been authorized by the Graduate Council as those in which doctoral investigations and dissertations may be undertaken. The supporting fields of study required of all candidates for the degree of Doctor of Philosophy are specified for each individual student by his Consultative Committee before admission to study under the Council.

This list of fields is subject to such changes as the educational resources of the University may direct. The prospective student may address preliminary inquiries concerning his research interests to the member of the Council who is in charge of the field, or to the Chairman of the Graduate Council.

Anatomy

(1) Gross Anatomy; (2) Histology — Telford

Bacteriology

Antibiotics — Welch
Bacterial Physiology and Nutrition — Ajl
(1) Immunity in Tuberculosis; (2) Coliform Bacteria and Antibiosis — Parr
(1) Intestinal Microbiology; (2) Immunology: Antigenic Analysis — Griffin
Virology — Robbins

Biochemistry

Amino Acid Metabolism — Udenfriend
Animal Nutrition — Briggs
Biochemical Detoxication — Brodie
(1) Carbohydrate Metabolism; (2) Nutrition (emphasis on vitamins); (3) Pathological Chemistry — Roe
Lipids — Treadwell
Tissue Respiration — Burk

Biology

Cytology — Bowman

Botany

(1) Mycology; (2) Plant Pathology	Palmer
Taxonomy	Smith

Chemistry

Inorganic	Naeser
Organic	Wrenn
Physical: Kinetics and Electrochemistry	Wood
Physical: Solubilities	Van Evera
Physical-Organic: Reaction Mechanisms	Sager

Economics

(1) Economic Fluctuations; (2) History of Economic Thought	Burns
(1) Economic Theory; (2) Economic Planning	Watson
International Economics	Polak
International Finance	Young
(1) National Income; (2) Public Finance	Colm
Transportation	Kennedy

Geography

Area Synthesis	Campbell

History

European: (1) Diplomatic since 1815; (2) The Modern Near East	Davison
European: Nationalism	Kayser
European: Russian and Soviet	Thompson
Latin American	Davis
United States: (1) Diplomatic; (2) Political	Merriman
United States: (1) Social; (2) Economic	Gray

Law

Jurisprudence	Collier

Literatures and Languages

American: Literary Nationalism	Bolwell
English: (1) Sixteenth Century Drama; (2) Seventeenth Century Drama	Tupper
Romance: Modern Spanish Literature	Alonso
Romance: (1) Romance Linguistics; (2) Old and Middle French; (3) Old Spanish	Doyle
Romance: Seventeenth Century Literature	Protzman
Romance: (1) Sixteenth Century French Literature; (2) Modern French Literature	Keating

Mathematics

Algebra: Finite Groups	Johnston
Analysis: Infinite Series	Mears
Geometry: Differential Geometry	Taylor

Pharmacology

(1) Chemotherapy; (2) Drug Metabolism	Smith
(1) Drug Metabolism; (2) Medicinal Chemistry	Mandel

Physics	
Electron Optics	Marton
Experimental: Electronics	Brown
Low Temperature Studies	Pellam
Theoretical: Aerodynamics	Frenkiel
Theoretical: (1) Relativity; (2) Nuclear; (3) Astrophysics	Gamow
Physiology	
(1) Blood Pressure Studies; (2) Neuro-Muscular Studies	Leese
Cardiovascular Shock	Rosenthal
Endocrinology	Vollmer
Hemo-Dynamics	Clarke
Political Science	
International: Comparative Government and Political Theory	Kraus
International: International Politics and Organization	Hadsel
International: The Far East	Ballantine
International Law: (1) War and Neutrality; (2) Arbitration	Brewer
United States: (1) The Legislative Process; (2) Governmental Organization and Administration	West
Psychiatry	
Problems of Treatment (M.D. degree required for admission)	Overholser
Psychology	
Counseling and Guidance	Dreese
Experimental Psychology	Fox
Military Counseling and Guidance	Faith
Personnel Psychology	Mosel
(1) Psychological Measurements; (2) Abnormal Psychology	Hunt
Social Psychology	Tuthill
Statistics	
Multivariate Analysis	Kullback
(1) Theoretical: Probability and Sampling; (2) Applied: Econometrics	Weida
Zoology	
Entomology: Insect Physiology	Munson
Invertebrate: Crustacea	Schmitt
Invertebrate: Molluscan Morphology and Physiology	Gaitsoff
Parasitology: Parasitic Protozoa	Wright
Vertebrate: Embryology and Morphogenesis	Hansen
Vertebrate: Ichthyology	Schultz

ADMISSION PROCEDURE

For admission the student must possess adequate preparation for advanced study, including satisfactory Bachelor's and Master's degrees, or the equivalent, together with acceptable personal qualities and a capacity for creative scholarship. Previous graduate study should have been in the same general field as that proposed for doctoral study.

Before applying, the student should have personal interviews with the Chairman of the Council and the professor in charge of the central field of study.

After application blank and transcripts of previous academic training have been filed the student must demonstrate his ability to read either French or German in the field of his major interest. Both French and German are required without exception, but only one at the time of admission. The student then meets his personal admission committee which makes its recommendations to the Council. The committee may specify additional prerequisites for the student's doctoral program.

STUDY FOR THE COUNCIL FELLOWSHIP EXAMINATION

The discipline for the degree is divided into two stages. The first is made up of study in related fields of learning which support the general area of research concentration, culminating in the Council Fellowship Examination. The second stage is composed of research and investigation of a particular project in a special field and the presentation of such research in a written dissertation, culminating in the Final Examination.

At the beginning of the student's program of study leading to the Council Fellowship Examination, a consultative committee is assigned to direct his work in a group of fields of learning, usually five or six in number, deemed necessary to insure his breadth of knowledge and general competence for continuing independent research, as well as to support the dissertation project in his central field. Members of the consultative committee will advise the student concerning the scope and content of these supporting fields, and will assist the student in preparation for his examination in them.

This advanced study may be done by attending graduate courses of instruction and seminars, by conference with members of the student's committee, and by independent means. The examination, however, not credits or grades for work done in courses, is the sole test of the student's ability to enter upon the second phase of his doctoral discipline. The examination is a series of written tests usually extending over a period of one week. The major portion of a day is given to each part of the examination covering one of the fields of study on the student's program. If the results of the examination are satisfactory the student is admitted as a Fellow of the Graduate Council, to pursue his specialized study and research under the supervision of a member of the Council.

RESEARCH, THE DISSERTATION, AND THE FINAL EXAMINATION

After the student has been inducted as a Fellow of the Council and his research program has been arranged, he is responsible only to the mem-

ber of the Council who directs his research project. As a Fellow, he may attend general meetings of the Council and participate in the programs of research discussion, and enjoy unrestricted use of all the academic facilities of the University. When necessary, the Graduate Council makes provision for sending the Fellow to some other institution, library, or laboratory for special study in connection with his doctoral investigation.

The doctoral dissertation is required of all Fellows as evidence of ability to perform scholarly research and to interpret its results. An extended summary of the dissertation is published in a periodical volume by the University for distribution to other institutions and libraries. Printed copies of detailed regulations concerning the dissertation are supplied to all candidates for the doctorate.

When the completed dissertation has been approved by the member of the Council in charge of the research project, the Fellow is presented for his final examination. This examination is oral and open to the public. The committee of examiners includes not only members of the Council competent in the research field or in closely related subjects, but also at least two qualified experts from other research institutions brought to the University to participate in the examination. If the Fellow satisfies the examining committee concerning the high quality and originality of his contribution to knowledge as well as his mastery of the scholarship and research techniques of his field, the Council recommends him for the degree of Doctor of Philosophy.

POST-DOCTORAL STUDY

The Council expects its graduates to continue their interest in advanced study and research, and to contribute to its program. All graduates are listed as Associate Fellows and, upon request, will receive notices of all general meetings. They may continue any studies in the University without payment of tuition, and enjoy all University library privileges. Such graduates are required to pay only the usual residence fee in order to establish their active membership in the University. The use of laboratory space and equipment is contingent upon availability, and the cost of all laboratory or special library material is paid by the graduate. Special arrangements for such privileges must be made with the Chairman of the Council. Post-doctoral work taken under this privilege may not be applied toward any degree offered by the University.

REGULATIONS

Candidates and Fellows in the Graduate Council are subject to, and are expected to familiarize themselves with, the regulations regarding

REGISTRATION, FEES AND FINANCES *stated on pages 23–27, and the University regulations stated on pages 46–54.*

RESIDENCE AND CONTINUOUS REGISTRATION

The Graduate Council expects all students to work on their doctoral programs in residence, although there is no formal regulation concerning the minimum amount of time of resident study either in preparation for the Council Fellowship Examination or as a Fellow of the Council engaged in doctoral research. The student who undertakes either part of the doctoral program on full or limited schedule must, in accordance with University regulations, maintain continuous registration under the Graduate Council even when the Council has granted a leave of absence for study or residence elsewhere. Failure to maintain registration in each semester of the academic year disrupts the residence status of the student. In such case, the student must reapply for admission to the Council, under whatever new conditions and regulations are set up by his consultative committee or the member of the Council who directs his research.

TEACHING FELLOWSHIPS AND GRADUATE ASSISTANTSHIPS

A limited number of Teaching Fellowships are assigned annually to certain departments of instruction open to doctoral students registered under the Graduate Council. In many departments of instruction graduate assistants are appointed to assist in the academic program. Applicants for teaching fellowships and graduate assistantships should inquire directly of the executive officer of the department concerned regarding vacancies, details of appointment, and the kind of personal data to be supplied for consideration.

A pamphlet describing details of the Graduate Council program, together with a current list of fields of research offered by the Council, will be sent upon request to the Office of the Graduate Council.

THE SCHOOL OF MEDICINE

THE FACULTY*

Walter Andrew Bloedorn, A.M., M.D., Sc.D., *Dean of the School of Medicine*
Angus MacIvor Griffin, Ph.D., *Assistant Dean of the School of Medicine*
Thomas Martin Peery, A.B., M.D., *Director of Postgraduate Instruction*

Joseph Hyram Roe, Ph.D., *Professor of Biochemistry*
Walter Andrew Bloedorn, A.M., M.D., Sc.D., *Professor of Medicine*
Leland Wilbur Parr, Ph.D., *Professor of Bacteriology*
Winfred Overholser, A.B., M.D., Sc.D., L.H.D., *Professor of Psychiatry*
Frederick A. Reuter, M.D., *Professor of Urology*
Harry Ford Anderson, M.D., *Professor of Dermatology and Syphilology*
Preston Alexander McLendon, B.S., M.D., *Professor of Pediatrics*
John Parks, M.S., M.D., *Professor of Obstetrics and Gynecology*
Brian Blades, A.B., M.D., *Professor of Surgery*
Paul Kenneth Smith, Ph.D., *Professor of Pharmacology*
James Winston Watts, B.S., M.D., *Professor of Neurological Surgery*
Chester Elwood Leese, Ph.D., *Fry Professor of Physiology*
Thomas McPherson Brown, A.B., M.D., *Eugene Meyer Professor of Medicine*
Angus MacIvor Griffin, Ph.D., *Professor of Bacteriology*
Ronald Atmore Cox, A.B., M.D., *Professor of Ophthalmology*
Thomas Martin Peery, A.B., M.D., *Professor of Pathology*
William Woodrow Stanbro, M.D., *Professor of Radiology*
Charles Samuel Wise, B.S., M.D., *Professor of Physical Medicine and Rehabilitation*
Carleton Raymond Treadwell, Ph.D., *Professor of Biochemistry*
Charles Seymour Coakley, M.D., *Professor of Anesthesiology*
Ira Rockwood Telford, Ph.D., *Professor of Anatomy*
Paul Calabrisi, Ph.D., *Professor of Anatomy*
Harold Stevens, Ph.D., M.D., *Professor of Neurology*
Ernest Alfred Watson Sheppard, M.D., C.M., *Clinical Professor of Ophthalmology*
Henry Lauran Darner, A.B., M.D., *Clinical Professor of Obstetrics and Gynecology*
Thomas Carlton Thompson, B.S., M.D., *Clinical Professor of Urology*
William Staton Anderson, A.B., M.D., *Clinical Professor of Pediatrics*
Harold George Mandel, Ph.D., *Associate Professor of Pharmacology*

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* The President of the University, the Dean of Faculties, and the Registrar of the University are members of the Faculty.

William Stanley McCune, A.B., M.D., *Associate Clinical Professor of Surgery*

James Jerry McFarland, Jr., *Assistant Clinical Professor of Otolaryngology*

Victor Frederick Ludewig, A.B., B.S., *Administrator of the University Hospital*

COMMITTEES*

The Dean's Council

Joseph Hyram Roe
John Parks
Winfred Overholser
Brian Blades
Angus MacIvor Griffin

Committee on Administration of the University Hospital and Outpatient Department

Walter Andrew Bloedorn, *Chairman*
John Parks
Thomas McPherson Brown
Brian Blades
Victor Frederick Ludewig

Committee on Admissions

John Parks, *Chairman*
Angus MacIvor Griffin
Howard Clemeth Pierpont
Paul Calabrisi

Committee on Curriculum

Thomas Martin Peery, *Chairman*
Leland Wilbur Parr
Brian Blades
John Parks
Paul Kenneth Smith
Thomas McPherson Brown

Committee on Library

Chester Elwood Leese, *Chairman*
John Parks
Thomas McPherson Brown
Carleton Raymond Treadwell
Paul Calabrisi
Brian Blades
Thomas Martin Peery
Ira Rockwood Telford
Victor Frederick Ludewig

* The President of the University and the Dean of the School of Medicine are members ex officio of all committees.

Committee on Research

Angus MacIvor Griffin, *Chairman*
Brian Blades
John Parks
Thomas McPherson Brown
Paul Kenneth Smith
Carleton Raymond Treadwell
Thomas Martin Peery
Calvin Trexler Klopp

Committee on Scholarship

Joseph Hyram Roe, *Chairman*
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Leland Wilbur Parr
Ira Rockwood Telford
Thomas McPherson Brown

Committee on Intern and Resident Training

Victor Frederick Ludewig, *Chairman*
Brian Blades
John Parks
Thomas Martin Peery
Thomas McPherson Brown

Committee on Hospital Privileges

Thomas McPherson Brown, *Chairman*
Brian Blades
John Parks

Advisory Committee on Postgraduate Instruction

Thomas Martin Peery, *Chairman*
Preston Alexander McLendon
Winfred Overholser
Brian Blades
John Parks
Clayton Bernard Ethridge
Thomas McPherson Brown

Advisory Committee on Cancer Research

Louis Katz Alpert, *Chairman*
Paul Kenneth Smith
Joseph Hiram Roe
Ira Rockwood Telford
Thomas Martin Peery
Calvin Trexler Klopp
Mary Louise Robbins
Jeremiah Keith Cromer
Charlotte Patricia Donlan
Howard Clemeth Pierpont

Advisory Committee on Rehabilitation

Irene Gorski Tamagna, *Chairman*
Thomas McPherson Brown
John Pletch Adams
John McCallum Evans
James Richard Thistlethwaite
Francis Liell Wenger

GENERAL INFORMATION

INTRODUCTORY

The School of Medicine of The George Washington University was opened in March 1825; of the medical schools now in existence in the United States, it is the eleventh in chronological order of founding. The University Hospital and Dispensary were established in 1898 and made a part of the organization of the School.

The School is a member of the Association of American Medical Colleges and is one of the medical colleges which have been continuously approved by the American Medical Association. The degrees of the School of Medicine are recognized by all state examining boards.

PURPOSE AND AIMS

The purpose of the School of Medicine is to train physicians competent in the art and science of medicine, which includes general practice, further training for special practice, teaching, research, and medical administration.

On the undergraduate level the aims of the school are (1) to select for training students of superior aptitude and character; (2) to train students thoroughly in the theoretical principles and in the laboratory and clinical applications of the medical sciences; and (3) to provide a diversity of clinical experience with a wide range of clinical material, through well supervised clinical clerkships in federal, public, and private hospitals providing facilities for all specialized fields of medicine.

The aims of the School of Medicine in the fields of graduate and postgraduate instruction are (1) to provide interns and residents for a number of hospitals in the Washington area for advanced training in both general and specialized practice; (2) to direct an expanding program of fundamental and applied research, integrated with teaching at the School of Medicine, and in keeping with the increasing need for medical knowledge and the growth of Washington as one of the world's great centers of medical research; and (3) to provide postgraduate instruction in the most recent advances in research and in clinical medicine.

To achieve these objectives the School of Medicine has developed the systematic plan of instruction outlined below and a balanced, comprehensive curriculum. In carrying out its program the School seeks to maintain a faculty of appropriate size and outstanding ability, to make the most effective use of the expanding University facilities, and to take full advantage of the exceptional opportunities for clinical and research training in the Washington area.

ORIENTATION PROGRAM

A distinctive curricular feature of the George Washington University School of Medicine is a program for the orientation of students entering the School which is given to them during the first week of the regular academic year. The aims of the program are: (1) to acquaint the student with the School of Medicine and with the faculty of the School of Medicine; (2) to bridge the gap between premedical and medical education; (3) to indoctrinate the student in the responsibilities and ethical principles upon which medical practice rests; (4) to help the student get an effective start in his medical studies.

The orientation course is given because it is recognized that students find medical school quite different from their previous college experience. The language is different, the techniques are more detailed, and the demands upon the students in quality and quantity of work are far more exacting. It has been found helpful to point out to the students that if at times they feel the requirements are too rigorous, they are being trained for decisions which may mean suffering or well-being, life or death, for patients who ultimately will be under their care. The subjects covered in the orientation course include an interpretation of the student out-look by the President of the current senior class, a discussion of the relationship between premedical and medical education, by a member of the Committee on Admissions, a thirty hour course in the evaluation of scientific evidence, the history of the School of Medicine, an explanation of the medical curriculum by the Chairman of the Committee on Curriculum, an introduction to the Medical Library with guidance on how to use it by the Chairman of the Library Committee, a statement of the ideals and aims of the medical profession by the Dean, a brief course in the history of medicine as related to the various pre-clinical and clinical subjects by heads of departments, a lecture on the relationship of the physician and the law by an eminent medical-legal authority, a discussion of medical ethics and the patient-physician relationship, explanation of student health program, a presentation of basic concepts of health and disease by a Professor of Medicine, and practical advice to the students on how to study by a senior member of the faculty.

PLAN OF INSTRUCTION

The curriculum is a graded one beginning with fundamental aspects of the basic sciences and progressing gradually into the clinical teaching of the last two years. The teaching is organized systematically under the various departments of the School of Medicine as listed under Courses of Instruction in this CATALOGUE.

During the first year the student receives instruction in anatomy,

biochemistry, and physiology, using the classroom and laboratory facilities of the School of Medicine. In order to emphasize the importance of the basic sciences, patients are studied from time to time and the relationship of these fundamental sciences to the clinical sciences is stressed.

In the second year, having completed the preliminary study of the structure and function of the normal body, the mechanisms of disease are considered. The various bacteria and other microbiologic agents capable of producing disease are studied in the laboratory. The effects of various diseases upon the tissues of the human body are taught in pathology, serving as a basis for the understanding of disturbed structure and function. The mode of action of the various drugs and therapeutic agents is studied in the course in pharmacology as an introduction to the use of these agents in the treatment of patients. The student is taught to conduct a physical examination and to interpret and evaluate the various symptoms of disease. During the second semester of this year patients are assigned to him for case study under the close supervision of his instructors. Introductory lectures in medicine, surgery, pediatrics, obstetrics and gynecology, neurology, radiology, and psychiatry are given during this period, preparing the student for his responsibility with patients in the hospital wards and clinics.

In the third year the student is assigned to the District of Columbia General Hospital for closely supervised clinical instruction. He serves as clinical clerk in the various divisions of the hospital and assists in the preparation of the clinical records and basic laboratory examinations. He learns to perform the common ward procedures and to use diagnostic and therapeutic equipment. During this period there are daily lectures and clinical demonstrations planned in an orderly fashion proceeding from simpler to more complex problems.

During the summer period following the third year the student is required to spend eight weeks in one of the various teaching facilities of the School of Medicine. This plan permits limited electives, so that the student may explore opportunities in the various specialties not ordinarily included in the medical curriculum.

In the fourth year the student spends most of his time in the study of ambulatory patients. This instruction is given in the clinics of the University Hospital, Children's Hospital, Mount Alto Hospital, Walter Reed General Hospital, and St. Elizabeths. In these various institutions members of the faculty continue to supervise the students in their evaluation of clinical problems by a careful review of each patient, and joint planning of treatment procedures. Stress is placed upon the total individual and his environment, since it is recognized that many factors, emotional and economic as well as physical, contribute to disease and must be considered if the individual is to be restored to health and effectiveness. Instruction in the basic sciences is continued in the fourth

year in special conferences in which representatives of several departments of instruction participate.

By the completion of his four-year course the student must have demonstrated that he has acquired the basic knowledge and experience necessary for advanced training on the internship.

THE MEDICAL CURRICULUM

First Year

Subject	Lecture	Laboratory	Conference	Total
Gross Anatomy	112	256	—	368
Embryology and Histology	48	96	—	144
Neuroanatomy	32	64	—	96
Biochemistry	76	180	32	288
Physiology	144	160	32	336
Disaster Medicine	16	—	—	16
Introduction to Medical Psychology	16	—	—	16
Psychopathology	16	—	—	16
Total	460	756	64	1,280

Second Year

Bacteriology	64	144	16	224
Pathology	60	120	40	220
Pharmacology	80	80	24	184
Physical Diagnosis	16	96*	—	112
Psychiatry	16	48	—	64
Clinical Microscopy	—	48	—	48
Medicine	80	—	—	80
Surgery	48	—	—	48
Hygiene	32	—	—	32
Pediatrics	32	—	—	32
Neurology	16	—	—	16
Obstetrics	16	—	—	16
Psychosomatic Disorders	16	—	—	16
Radiology	16	—	—	16
Total	492	536	80	1,108

* Practical exercises and/or clinics

Third Year

Subject	Lecture, Conference, or Clinic	Clerkship	Total
Anesthesiology	16	—	16
Clinical Pathological Conference	32	—	32
Dermatology and Syphilology	16	—	16
Health Resources Survey	3	—	3
Medical Jurisprudence	16	—	16
Medicine	16	240	256
Medical Laboratory	—	60	60
Neurology	—	60	60
Obstetrics and Gynecology	48	120	168
Ophthalmology	16	—	16
Pediatrics	16	120	136
Physical Medicine	12	—	12
Psychoneuroses	16	—	16
Surgery	29*	240	269
Surgical OPD and Orthopedics	—	60	60
Surgical OPD and Urology	—	60	60
Therapeutic Conference	16	—	16
Total	252	960	1,212

Summer Clerkship

Medicine, Surgery, Obstetrics and Gynecology *or* Pediatrics—eight weeks between third and fourth years.

Fourth Year

A) Lecture

Subject	Hours
Clinical Pathological Conference	27
Forensic Medicine	12
Medical Economics	14
Nutrition	8
Pediatrics	27
Public Health Practice	5
Surgical Anatomy	14
Surgical Pathology	8
Total	115

B) Clerkship†

Division	Weeks
Medicine	9
Surgery	9
Obstetrics and Gynecology	6

* Includes Fractures and Orthopedics, 16 hours.

† A three-week elective may be substituted for part of the clerkship in the division where the summer clerkship was served.

Pediatrics	6
Cancer Clinic	3
Psychiatry	3
Total	36

Equipment and Facilities

The George Washington University Hospital.—The hospital, with a capacity of 400 beds, was opened in 1948. This splendid edifice, which is one of the outstanding hospitals in the United States, is completely furnished with the latest and most scientific apparatus and equipment. Its purpose is to supplement existing hospital resources in the District of Columbia for the care of the sick and the injured; to provide facilities for the education of physicians, nurses, and technicians; and to promote medical knowledge.

The hospital is staffed and controlled by the Faculty of the George Washington University School of Medicine and it provides excellent clinical material for the instruction of medical students. Virtually every specialty in the fields of medicine and surgery has assigned space and equipment in both the outpatient department and the bed-patient section of this modern institution.

Medical School Building.—The building housing the School of Medicine is a five-story structure with lecture rooms, classrooms, students' rooms, and the following laboratories: anatomy; bacteriology, hygiene, and preventive medicine; biochemistry; pathology; and pharmacology and physiology.

They are fully equipped to enable students to pursue adequately the laboratory courses and to acquire the technical skill necessary in modern clinical and investigative work.

Research Building.—The Research Building houses special laboratories for graduate and staff research in the Departments of Anatomy; Biochemistry; Pharmacology; Physiology; and Bacteriology, Hygiene, and Preventive Medicine. Special facilities are provided for the study of radio-active compounds, for tissue-culture techniques, and for virological procedures. Selected students are invited to participate in certain aspects of the research program either on a volunteer basis or with the support of special Research Scholarships.

On the first floor, the east wing is occupied by a modern medical library; the west wing houses the administrative offices of the School of Medicine. The second floor is given over to the photographic laboratories and other facilities for audio-visual aids to education.

Medical Library.—The Medical Library in modern, well-equipped quarters on the first floor of 1339 H Street NW. since 1955, contains

14,300 carefully selected volumes, including the new medical works and the principal medical journals.

Inter-library loan service is maintained with other medical and scientific libraries.

The Medical Library is open from 9:00 A.M. to 10:00 P.M. each class day, Monday through Friday, and from 9:00 A.M. to 5:00 P.M. Saturday.

A branch of the Medical Library is maintained in the University Hospital for the use of the resident physicians and interns.

Government Museums

The Armed Forces Institute of Pathology, on the grounds of Walter Reed Army Medical Center, affords unexcelled opportunity for study of conditions met in general medicine and surgery as well as those of peculiarly military significance. Its collection of anatomical and pathological specimens comprises material received from all areas of the world and is unequaled in this country. The Museum of Hygiene, the National Museum, the Smithsonian Institution, the Botanic Gardens, and the various collections of the Department of Agriculture all afford opportunity for study of materials of special interest in various areas of Medicine and its allied sciences.

Clinics

Students at the George Washington University School of Medicine receive clinical training at the University Hospital, at the new University Cancer Clinic, and at five affiliated hospitals. In the very first year the medical student begins his work in the hospital as well as in the lecture halls and classrooms.

The University Hospital.—All clinics are under the supervision of the Dean, who is also Medical Director of the Hospital. This insures the highest possible utilization of available clinical material for teaching purposes and the proper supervision of clinicians and students; it brings the individual student into direct contact with patients and requires him to do, under authoritative supervision, the clinical and laboratory work necessary for diagnosis and treatment; and it permits proper interpretation of the conditions occurring during the progress of cases and promotes the keeping of adequate records. Clinical and clinical pathological conferences are held in which the history of cases, the physical findings, laboratory records, and the post-mortem pathology when available, are presented and correlated.

The Outpatient Department.—The Outpatient Department has clinical facilities for each Service in the Hospital. Fourth-year students are

assigned in rotation by section for clinical instruction in the Outpatient Department.

The George Washington University Cancer Clinic.—This modern building, opened in 1954, houses the Cancer Detection Clinic; the Helen L. and Mary E. Warwick Memorial; and special laboratories for research related to the nature, diagnosis, and treatment of cancer.

The facilities of the Cancer Detection Clinic are available to medical students. In addition the diagnosis and treatment of various forms of neoplasms are presented. The results of the treatment of neoplasms are evaluated by follow-up studies.

The Helen L. and Mary E. Warwick Memorial, for cancer and allied diseases, was affiliated with The George Washington University in July 1948. The purposes of this clinic are (1) to provide care for cancer patients, through group consultations within a cancer organization, and (2) to provide training for students and physicians in the field of encology.

The District of Columbia General Hospital, Washington's large city hospital has 1,420 beds and an outpatient department in which approximately 76,900 patient-visits are made each year. It provides clinical opportunities in virtually every branch of medicine and surgery.

Medical students receive clinical training in certain fields at the Walter Reed Army Hospital, one of the Armed Forces' outstanding teaching hospitals. Clinical experience in both medical and surgical subjects is also provided at the Mt. Alto Veterans Administration Hospital.

At Children's Hospital, one of the largest and best known hospitals for children in the United States, medical students receive training and clinical experience in Pediatrics, with both clinic and in-patient patients.

St. Elizabeths Hospital, which has recently celebrated the 100th anniversary of its founding, is one of the world's most famous mental hospitals. This hospital cares for 7,500 patients with virtually every known psychiatric and neurologic disorder. The George Washington University medical students begin their studies in psychiatry in their first year and these studies continue throughout the four years. Much of their clinical instruction in psychiatry and neurology is received at St. Elizabeths, and prominent psychiatrists and neurologists on the St. Elizabeths staff are members of the George Washington University School of Medicine faculty. Additional clinical experience in psychiatry and neurology is gained by students at the George Washington University Hospital Psychiatric Department, in the Outpatient Department of the University Hospital, and special lectures and clinical work in child

psychiatry are given in the Psychiatric Department of Children's Hospital.

ADMISSION, REGISTRATION, FEES AND FINANCIAL REGULATIONS

Students in the School of Medicine are subject to, and are expected to familiarize themselves with, the regulations stated on pages 12–27.

Registration in the School of Medicine *is for a period of one academic year.* After the student has entered the courses of instruction he is obligated for the full tuition for the academic year. No part of the tuition will be refunded upon withdrawal or dismissal for any cause. Acceptance by the School of a student's fee does not in any way obligate the School to accept the student for any subsequent year, and the right is reserved to drop any student from the School whenever, in the interest of a student or the School, the Faculty deems it advisable to do so.

A fee of $10 to defray the costs of completing the records for final consideration for admission must accompany each application. This fee applies to students whose premedical training was completed at this University as well as to students who have not previously attended this University. Fees for each semester are $450, payable in advance.

Because the number of applicants far exceeds the limit of each class, places can be reserved only for those qualified applicants who remit a deposit of $100 which will be credited toward the tuition of the first semester. Under no circumstances will this deposit be refunded.

Credit for work will not be given until, at the completion of a laboratory course, the student has replaced or paid for all articles of equipment or other University property which he has lost, broken, or destroyed. All breakage or loss not directly traceable to an individual student is assessed pro rata.

Cost of Textbooks and Student Equipment

The minimum cost of necessary textbooks and student equipment (microscope, drawing materials, glass slides, clinical thermometer, stethoscope, hemocytometer, uniforms, etc.) is approximately as follows: first year, $400; second year, $250; third year, $125; fourth year, $80; total, $855.

A fee of $1 a semester is charged for the use (optional) of a locker.

REGULATIONS

Students in the School of Medicine are subject to and are expected to familiarize themselves with, the general University regulations stated on pages 46–54.

Absence

Absence consists in being away from a class or clinic during a scheduled period, entering after the class or clinic has begun, or leaving before either is dismissed.

Excuse for absence due to sickness must be accompanied by a certificate signed by the attending physician and must be filed in the Office of the Dean.

For every unexcused absence a department will deduct one-half of one per cent from the student's final grade in the subject involved.

Grades

The following grading system is used: *A* (90–100); *B* (80–89); *C* (75–79); *D* (65–74) condition; *E* (below 65) failure; *Inc.*, incomplete. The passing grade in each subject is *C*.

A student who is conditioned in any subject will not be advanced until such condition is removed and then only by authority of the Committee on Scholarship.

Examinations

Examinations, which may be written, oral, or practical, will be held at the end of each semester.

All students in the School of Medicine are required to take Part I and Part II of the National Board Examinations, except that students from those states and foreign countries which do not recognize the National Board may be exempted from Part II by action of the Committee on Scholarship.

PHYSICAL EXAMINATIONS

All first-year students are given a comprehensive physical examination upon admission to the School of Medicine. The students are informed of the findings and advised regarding such measures as will tend to maintain a high standard of health.

In addition medical students benefit from the complete Tuberculosis Case Finding Program which the School has maintained since 1938–39. Under this program all students receive tuberculin tests, X-ray examinations, and such special attention from chest specialists as is necessary to reduce to a minimum the dangers from tuberculosis. Students are immunized against those diseases for which proven prophylactics exist.

THE DEGREE OF DOCTOR OF MEDICINE

Upon the satisfactory completion of the requirements of the School of Medicine, the degree of Doctor of Medicine is conferred.

REQUIREMENTS FOR THE DEGREE

Every candidate for graduation with a degree of Doctor of Medicine must be at least twenty-one years of age, of reputable character, and free of all indebtedness to the University. He must have satisfied the admission requirements, completed satisfactorily not less than four academic years of study as a matriculated student in Medicine, completed all required courses, and passed satisfactorily all prescribed examinations.

Combined Arts and Medicine Curriculum

In order to be recommended for the degree of Bachelor of Arts, the candidate must complete at least ninety semester hours of prescribed college work (at least thirty semester hours and one year of residence must be completed in Columbian College, the senior liberal arts college), and the first year of the medical curriculum. Upon satisfactory completion of the fourth year of the medical curriculum the student becomes eligible for the degree of Doctor of Medicine.

Honors

A candidate who has completed the four-year medical course with an average grade of *A* may be recommended for graduation "with distinction".

INTERN AND RESIDENT TRAINING PROGRAM

The George Washington University Hospital offers rotating-type internships as classified by the National Intern Matching Programs, Inc. Twenty-five internships of one year each are offered; thirteen in the Department of Medicine with emphasis on medicine, ten in the Department of Surgery with emphasis on surgery, and two in the Department of Pathology with emphasis on pathology.

Rotating Internships, Emphasis on Medicine.—Interns will be assigned to seven months of general medicine, two months on the surgical service, and one month each on neuro-psychiatry, pediatrics, and obstetrics and gynecology.

Rotating Internships, Emphasis on Surgery.—Interns will be assigned

to the surgical service for nine months, to general medicine for two months, and to obstetrics and gynecology for one month.

Rotating Internships, Emphasis on Pathology.—Interns will be assigned to the pathology service for six months, to medicine for two months, to surgery for two months, to pediatrics for one month, and to obstetrics for one month.

A total of approximately forty-two approved residencies are offered in anesthesiology, cardiac diseases, internal medicine, neurologic surgery, obstetrics-gynecology, oral surgery, pathology, physical medicine, psychiatry, roentgenology, surgery and thoracic surgery. Residency programs are of from one to four years depending upon the service. Appointments are for one year subject to renewal. In several of the fields there are affiliations with local and government hospitals.

Fellowships of one or two years are available to acceptable candidates in anesthesiology, cardiology, chest diseases, infectious diseases, outpatient service, physical medicine, rheumatic diseases, surgery and thoracic surgery.

For application blanks and further information, address the Superintendent, The George Washington University Hospital, Washington 7, D. C.

POSTGRADUATE INSTRUCTION

The School of Medicine offers annually a series of short intensive postgraduate courses, varying somewhat from year to year. The series is designed for physicians in practice. The significant advances in the various specialties are presented, together with summaries of older information.

The Kellogg Medical Lectures, inaugurated in 1948, are a series of evening lectures and clinics, presented by distinguished physicians from other cities, designed primarily for physicians practicing in Washington and the vicinity. They are also attended by the Faculty, postgraduate students, and members of the senior class of the School of Medicine.

During the academic year 1955–56 approximately 139 physicians were enrolled in postgraduate courses. For application blanks and further information, address the Director of Postgraduate Instruction, The George Washington University Hospital, Washington 7, D. C.

MEDICAL TECHNOLOGIST COURSE

The course for medical technologists consists of twelve consecutive months of didactic and practical work in all phases of clinical laboratory technique. The course meets the full requirements of the Registry of Medical Technologists of the American Society of Clinical Pathologists.

Prerequisite: the Junior College Basic Course in Medical Technology, see page 72, or the equivalent.

Two classes are accepted each year, one entering in September and the other in March. Enrollment in each class is strictly limited so that personal instruction can be given.

Upon satisfactory completion of the course a certificate is awarded and the candidate is eligible for the certifying examination given by the Registry of Medical Technologists.

For application blanks and further information, address the Director of Laboratories, The George Washington University Hospital, Washington 7, D. C.

THE LAW SCHOOL

THE FACULTY AND STAFF OF INSTRUCTION*

John Theodore Fey, LL.B., M.B.A., J.S.D., *Dean of the Law School*
Carville Dickinson Benson, A.B., LL.B., S.J.D., *Assistant Dean of the Law School*
Louis Harkey Mayo, B.S., LL.B., J.S.D., *Assistant Dean of the Law School*
David Benson Weaver, A.B., LL.B., *Director of Continuing Legal Education*

Charles Sager Collier, A.B., LL.B., S.J.D., *Professor of Law*
William Thomas Fryer, A.B., LL.B., J.D., *Professor of Law*
Carville Dickinson Benson, A.B., LL.B., S.J.D., *Professor of Law*
†James Forrester Davison, A.B., LL.B., LL.M., S.J.D., *Professor of Law*
James Oliver Murdock, Ph.B., LL.B., *Professor of Law*
Oswald Symister Colclough, B.S., LL.B., LL.D., *Professor of Law*
John Theodore Fey, LL.B., M.B.A., J.S.D., *Professor of Law*
Herman Israel Orentlicher, A.B., LL.B., *Professor of Law*
Leroy Sorenson Merrifield, A.B., LL.B., M.P.A., *Professor of Law*
James Ward Morris, A.B., *Adjunct Professor of Law*
James Robert Kirkland, A.B., LL.B., LL.M., *Adjunct Professor of Law*
‡Bolitha James Laws, LL.B., LL.M., LL.D., *Adjunct Professor of Law*
John Wingfield Jackson, B.S., LL.B., *Adjunct Professor of Law*
Frank Hammett Myers, LL.B., LL.M., *Adjunct Professor of Law*
John Albert McIntire, A.B., LL.B., LL.D., *Professorial Lecturer in Law*
Justin Lincoln Edgerton, A.B., LL.B., *Professorial Lecturer in Law*
Philip Field Herrick, A.B., LL.B., LL.M., *Professorial Lecturer in Law*
George Edward Monk, A.B., LL.B., LL.M., *Professorial Lecturer in Law*
Charles James Zinn, A.B., LL.B., LL.M., S.J.D., *Professorial Lecturer in Law*
Joseph Dach, LL.D., LL.B., *Professorial Lecturer in Law*
Louis James Harris, A.B., LL.B., S.J.D., LL.M., *Professorial Lecturer in Law*
Robert McKinney Cooper, Ph.M., J.D., *Associate Professor of Law*

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* The President of the University, the Dean of Faculties, the Dean and Assistant Deans of the School, the Registrar of the University, the Director of Admissions of the University, Professors, Adjunct Professors, Associate Professors, and Assistant Professors constitute the Faculty.
† On sabbatical leave fall semester 1956–57.
‡ On leave of absence fall semester 1956–57.

John Patrick Burke, A.B., LL.B., *Associate Professor of Law*
David Benson Weaver, A.B., LL.B., *Associate Professor of Law*
Louis Harkey Mayo, B.S., LL.B., J.S.D., *Associate Professor of Law*
Glen Earl Weston, B.S., LL.B., *Associate Professor of Law*
Joseph Patrick Driscoll, A.B., LL.B., *Associate Professor of Law*
William Thomas Mallison, Jr., A.B., LL.B., *Associate Professor of Law*
Crombie James Dickinson Garrett, A.B., LL.B., *Associate Professor of Law*
Milton Paul Kroll, A.B., LL.B., *Lecturer in Law*
Eugene William Geniesse, B.S.E., M.S., LL.B., *Lecturer in Law*
William Wolcott Goodrich, LL.B., *Lecturer in Law*
Vincent Kleinfeld, LL.B., *Lecturer in Law*
Paul Archibald Rose, LL.B., *Lecturer in Law*
Herbert Joseph Liebesny, J.D., *Lecturer in Law*
Carl Clell Davis, B.S., LL.B., LL.M., *Lecturer in Law*
John Alexander Kendrick, A.B., LL.B., *Clerk of the Trial Practice Court*
Dudley Graham Skinker, LL.B., *Associate Clerk of the Trial Practice Court*

COMMITTEES*

The Dean's Council

William Thomas Fryer
James Forrester Davison
Leroy Sorenson Merrifield
Carville Dickinson Benson
James Oliver Murdock
Herman Israel Orentlicher
Robert McKinney Cooper

Committee on Admissions

Carville Dickinson Benson, *Chairman*
Louis Harkey Mayo
Harold Griffith Sutton

Committee on Graduate Studies

James Forrester Davison, *Chairman*
James Oliver Murdock
Leroy Sorenson Merrifield
Robert McKinney Cooper

* The President of the University, the Dean of Faculties, and the Dean and Assistant Deans of the Law School are members ex officio of all committees.

COMMITTEE ON SCHOLARSHIP

John Patrick Burke, *Chairman*
Carville Dickinson Benson — Louis Harkey Mayo

COMMITTEE ON CURRICULUM

Herman Israel Orentlicher, *Chairman*
William Thomas Fryer — James Forrester Davison
Robert McKinney Cooper — David Benson Weaver

LIBRARY COMMITTEE

Glen Earl Weston, *Chairman*
David Benson Weaver — William Thomas Mallison, Jr.

GENERAL INFORMATION

INTRODUCTORY

LOCATION IN THE NATION'S CAPITAL

The George Washington University Law School, now in its 91st year, is the oldest law school in the District of Columbia. The School took part as a charter member in 1900 in the organization of the Association of American Law Schools and it has been an active member of the Association since that time. It is approved by the Section of Legal Education and Admissions to the Bar of the American Bar Association.

National University, which has had an important place in legal education in the District of Columbia since 1869, was merged into The George Washington University in August 1954.

Of special significance is the location of the Law School in the Nation's Capital, the focal point of the law in action, both American and international. The work of the School goes on in this environment, presenting a unique opportunity for observation and study of federal agencies—judicial, legislative, and administrative. The years of residence at law school are years of participation in the life of the community, which, in the case of the George Washington University Law School, is the government of the United States by law. As a consequence, the study of law takes on added meaning, whether the goal be government service or private practice, general or specialized.

OBJECTIVES

The primary purpose of the Law School is to prepare men and women to meet the needs of society in the many fields of law, public and private.

These needs call not only for technical skill but also for responsible leadership in the development of the law and the administration of justice. In fulfilling these responsibilities the Law School offers: (1) a program of study in preparation for the practice of law; (2) programs of study and research on the graduate level for foreign as well as for American students; (3) a continuing legal education program for members of the bar; (4) institutes and forums on current topics in domestic and foreign law; (5) the publication of a law journal containing the results of research in public law; and (6) encouragement of student professional co-curricular activities.

Programs of Study

Traditionally the Law School has been national in the geographic distribution of its students. At the present time, men and women holding baccalaureate degrees from more than three hundred colleges and universities come from the forty-eight states, the territories, and several foreign countries to comprise the student body. As a consequence the programs of study leading to the degrees of Bachelor of Laws and Juris Doctor have been planned to provide instruction and training for the practice of law wherever the Anglo-American legal system obtains.

Graduate work leading to the degrees of Master of Laws and Doctor of Juridical Science is offered for those desiring further study and research in specialized fields of law.

Provision is made for advanced study by members of the bar who do not desire to register as candidates for degrees. Lawyers may take courses for this purpose either as unclassified graduate students or as continuing legal education students.

Graduate work is offered also to meet the needs of lawyers who come from countries whose legal systems are not based on the English law. There are two programs of study, one leading to the degree of Master of Comparative Law for the lawyers planning to return to their own countries, and the other leading to the degree of Master of Comparative Law (American Practice) for lawyers planning to remain in this country for the practice of law.

Organization of the Curriculum

The curriculum is organized so that students may enter the Law School at the beginning of the fall or spring semester of the academic year, or at the beginning of the summer term.

Morning and Evening Divisions

The School maintains an evening division. The evening division conforms to the standards of the morning division and has the same teaching staff.

Hours of Instruction

Morning sections: Monday through Friday, 9:10 A.M. to 1:00 P.M.
Trial Practice Court: Saturday 9:30 to 11:30 A.M.
Evening sections: Monday through Friday, 5:50 to 7:40 P.M.

The Library

The Law Library of 48,700 volumes contains the official reports of the decisions of the courts of last resort of all the states prior to the National Reporter System, and of some states complete to date; the National Reporter System, complete; the reports of the United States Supreme Court and lower federal courts, and the reports of federal administrative agencies; Shepard's Citations for the units of the Reporter System; the English Reports, Full Reprint; the English Law Reports; the Times Law Reports; the Dominion Law Reports; the United States statutes and codes; complete sets of statutes of all the states; the English statutes; the principal English and American digests and encyclopedias; collections of special reports and annotated cases; United Nations documents; leading textbooks and treatises; and practically complete sets of about 150 legal periodicals. A section of the Library, consisting of books acquired from National University, is known as the National University Law Collection.

The international law collection, formerly the library of the Carnegie Endowment for International Peace, is available to law students.

The Library, which is on the fourth floor of Stockton Hall, is open from 9:00 A.M. to 10:00 P.M., Monday through Friday; from 9:00 A.M. to 5:00 P.M. on Saturday; and from 2:00 to 6:00 P.M. on Sunday. Books and other materials do not circulate and must be used in the library.

The Law Review

The George Washington Law Review, published by the University, is edited and managed by students of the Law School under the supervision of Faculty advisers. It is devoted exclusively to state and federal public law. The location of the University in the National Capital, where the primary sources of federal public law may be observed in operation, affords an unexcelled opportunity for specialization in this field.

The *Review* organization includes a faculty editor-in-chief, an associate

faculty editor, a faculty board of advisory editors, a board of departmental advisory editors, and a board of student editors. The student editors are chosen each year on the basis of scholarship.

The Student Bar Association

Every student in the Law School is a member of the Student Bar Association, which is organized to enable students to become better acquainted with problems of the profession, to foster professional ideals, and to bring about closer contact with members of the profession engaged in active practice of the law.

The work of the Student Bar Association is carried on by various committees and by group and general meetings of a professional and social nature. From time to time lectures are given by outstanding authorities on legal and professional problems.

An important activity is the Van Vleck Case Club Competition, which provides an opportunity for training in appellate advocacy. First and second year students participate as contestants before courts composed of members of the Faculty and the local bar. Senior law students of the Case Club also sit as judges. The final argument is held before a court composed of distinguished federal judges.

Order of the Coif

The Order of the Coif, a national honor society with chapters in over forty law schools, aims "to foster a spirit of careful study and to mark in a fitting manner those who have attained a high grade of scholarship." The George Washington University Chapter was established in 1926. Members are elected each year from the highest-ranking 10 per cent of the graduating class of the Law School.

REGULATIONS

Students in the Law School are subject to, and are expected to familiarize themselves with, the following regulations and the regulations concerning Admission, Registration, Fees and Finances *stated on pages 12–27, and the University regulations stated on pages 46–54.*

Amount of Work

Students without substantial outside employment may take a program of studies of fourteen hours a week in which the majority of hours must be in the morning sections. Students, whether in the morning or evening division, with substantial outside employment must take a limited program of studies not exceeding ten hours a week. Students

taking a majority of their classes in the evening may not take more than ten hours a week. A minimum schedule of ten hours in the morning division and six hours in the evening division is required except in exceptional circumstances when authorized by the Dean.

Attendance

Regular attendance at classes is required and is necessary for successful work. A student who is deficient in class attendance in any course may, by action of the Faculty, be barred from taking the examination.

Attendance at classes is limited to students registered to take them for credit. "Auditing" classes is not permitted.

Residence Requirements

Candidates for the degree of Bachelor of Laws must complete a residence period of three academic years. Attendance in the morning division for the fall and spring semesters constitutes residence for an academic year; similar attendance in the evening division constitutes residence for three fourths of an academic year. Consequently, a morning student must attend six semesters to meet residence requirements; an evening student must attend eight. Students authorized to take schedules of less than ten hours in the morning division or less than six hours in the evening division receive residence credit on a proportional basis. Students who attend the summer term receive fractional residence credit.

Students planning to attend summer school sessions at other law schools and desiring to use credits obtained at such schools in their course at this Law School must first have the courses they wish to take approved by the Dean. In no event will credits be recognized in excess of those which might be obtained in a similar period in this School.

Examinations

Written examinations are held at the end of each course. Every student is required to take the regular examinations unless excused. No excuse for absence will be granted except by the Dean and then only for illness or other emergency. Application for excuse must be made in writing not later than one month after the date of the examination. A grade of *NG* (no grade) will be entered on the record of a student thus excused, and he may take the next regularly scheduled examination in the course for which the excuse has been granted.

No special examinations will be given; except that, upon written application to the Dean, showing sufficient cause, a candidate for a degree at a convocation before the next regular examination, if he would be entitled

to take a postponed examination, may, at the discretion of the Faculty, be given a special examination.

If a student fails to take an examination, a grade of *F* (to be counted as zero) will be recorded unless he has been excused from the examination as provided above or has obtained the Dean's permission to drop the course according to regulations stated on page 48.

Grades

Grades are indicated by the letters *A*, excellent, 85–100; *B*, good, 75–84; *C*, satisfactory, 65–74; *D*, poor, 55–64—below standard for graduation; *F*, failed—below 55; and *NG*, no grade—student excused from failure to take regularly scheduled examinations. See "Examinations" above, for grade upon failure to take an examination. The grades *A*, *B*, *C*, and *D* mean that the work has been completed and credit given for the courses. *F*, failed, means that no credit will be given. To obtain credit the student must repeat the course, except that a student who has obtained an average of *C* in the work of the semester just completed and the preceding semester and received a grade of *F* in only one course during those semesters may take the next regular examination in that course if he has not been excluded previously for low scholarship. The privilege is limited to taking the next regular examination, except that a candidate for a degree at a convocation before the next regular examination may be permitted to take a special examination at the end of the next semester. If on the reexamination the student receives a passing grade he will be given credit in the course. Both grades are recorded.

Exclusion and Probation for Poor Scholarship

Candidates for the Degrees of Bachelor of Laws and Juris Doctor.—A student who in one semester, or two successive semesters, fails in courses aggregating eight or more semester hours will be excluded, except that if currently registered he will be permitted to complete the work of the semester. Such a student is not eligible thereafter to be registered in the Law School or to attend classes. While excluded he may, however, with the consent of the Faculty, be admitted to the next regular examinations in those courses in which he has made a grade below passing, and if he receives a grade of passing in those courses with an average sufficient to make his cumulative average not less than *C*, he will be reinstated.

A student not subject to exclusion under the foregoing rule who at any time fails to maintain a cumulative average of at least *C*, will be placed on probation. A student on probation may at the discretion of the Dean be

required to reduce his program of study. If a student on probation does not, by the end of the second semester following that in which his average has fallen below *C*, receive grades sufficient to give him a cumulative average of at least *C*, he will be excluded.

The cumulative average of a student includes all the grades in all the courses taken while he is in the Law School as a candidate for a particular degree. When a course is repeated or a reexamination is taken, both the first grade and the subsequent grade or grades are counted in the cumulative average.

In special cases in which a student who has been excluded can clearly demonstrate that his low grades were due to special circumstances beyond his control and that he has the capacity to pursue the study of law with a definite likelihood of success, such student may be readmitted by the Faculty subject to such conditions as the Faculty may impose.

Candidates for Graduate Degrees.—A candidate for one of the graduate degrees whose work is not satisfactory in the opinion of the Faculty, taking into consideration the requirements and standards for the degree, may, by action of the Faculty, be excluded at the end of the semester for which he is currently registered.

Unclassified Students.—An unclassified student whose work is not satisfactory in the opinion of the Faculty may, by action of the Faculty, be excluded at the end of the semester for which he is currently registered.

Classification of Students

Students are divided into classes on the completion of semester hours as follows: first year, one through twenty-eight; second year, twenty-nine through fifty-six; third year, fifty-seven or more.

THE DEGREES OF BACHELOR OF LAWS AND JURIS DOCTOR

The programs of study leading to the degrees of Bachelor of Laws and Juris Doctor are addressed to the development and application of legal principles, skills, and ideals which are indispensable to the equipment of a lawyer for professional responsibility and leadership in modern society. They include, first and foremost, the traditional core of legal education, namely, the study of legal materials—judicial, statutory, and administrative—and instruction in the technique of their use. These programs include the study of the nature and purpose of law, the history of the Anglo-American legal system, and the history and standards of the legal profession; practice in the skills of legal research and legal writing; elementary training in trial practice; and, through the medium of seminars, experience in group handling of legal problems.

Requirements for the Degrees

Bachelor of Laws

To be recommended for the degree of Bachelor of Laws (LL.B.) the student must have completed a residence period of not less than three academic years (four years for evening students) and eighty semester hours, with a cumulative average of at least *C*. A minimum of one academic year of residence and twenty-eight semester hours are required of students admitted with advanced standing.

Juris Doctor

The degree of Juris Doctor (J.D.) is conferred as a recognition of the completion at the George Washington University Law School, with high rank, of the required program of study for the Bachelor's degree, including experience in research and legal authorship. To be recommended for this degree the student must have completed: (1) a residence period of not less than three academic years (four years for evening students) in the Law School; (2) eighty semester hours with a cumulative average of at least *B* including one of the following courses: Comparative Law, Jurisprudence, or one of the graduate seminars; and (3) one year of acceptable service on the board of student editors of *The George Washington Law Review*, election to which is subject to regulations laid down by the Faculty.

Honors

The degree of Bachelor of Laws or of Juris Doctor "with distinction" will be awarded students who obtain a cumulative average of *A*.

Curriculum

Required and Elective Courses.—A program of required and elective courses has been developed in order to assure coverage of the basic courses as well as to allow a degree of flexibility to meet the diverse interests of students. All first-year courses, three second-year courses, and one third-year course are required, leaving a total of thirty-eight hours of electives. In general, second-year students are restricted to second-year electives but in appropriate cases the taking of third-year electives will be approved. Similarly, specially qualified third-year students may secure approval to take graduate courses and research in public law.

Practice and Trial Practice Court.—Classroom instruction is conducted in pleading and procedure, trial and appellate practice, and evi-

dence. This instruction includes grounding in the principles of the Federal Rules of Civil Procedure and the Federal Rules of Criminal Procedure. In addition, each senior student is required to participate in the work of the Trial Practice Court, which includes the trying of cases as junior counsel and as senior counsel. A special section of the court is devoted exclusively to the trial of patent cases. Experience in preparing and arguing appellate court cases is available through the Case Club Competition.

Patent Law.—Students interested in patent law should take the following group of courses: Unfair Trade Practices, Substantive Patent Law, Patent Office Practice, Patent Trial Practice Court, Federal Anti-Trust Laws, and Trade Regulation Seminar.

Curriculum.—Following is the curriculum for students beginning in the fall semester. Adjustments are made to meet the needs of students beginning in the spring semester and the summer.

Morning Division

FIRST YEAR

FALL SEMESTER	Semester Hours	SPRING SEMESTER	Semester Hours
Legal Method and Legal System	4	Real Property	2
Contracts I	4	Contracts II	2
Personal Property	2	Agency	2
Criminal Law and Procedure	4	Torts	4
		Constitutional Law	4
Total	14	Total	14

SECOND YEAR

FALL SEMESTER	Semester Hours	SPRING SEMESTER	Semester Hours
Civil Procedure	4	Evidence	4
Electives	10	Conveyances	2
		Electives	8
Total	14	Total	14

THIRD YEAR

FALL SEMESTER	Semester Hours	SPRING SEMESTER	Semester Hours
Trial Practice Court	2	Trial Practice Court	2
Electives	10	Electives	10
Total	12	Total	12

Evening Division

FIRST YEAR

FALL SEMESTER	Semester Hours	SPRING SEMESTER	Semester Hours
Legal Method and Legal System	4	Torts	4
Contracts I	4	Contracts II	2
Personal Property	2	Criminal Law and Procedure	4
Total	10	Total	10

SECOND YEAR

FALL SEMESTER	Semester Hours	SPRING SEMESTER	Semester Hours
Real Property	2	Constitutional Law	4
Civil Procedure	4	Conveyances	2
Agency	2	Elective	4
Elective	2		
Total	10	Total	10

THIRD YEAR

FALL SEMESTER	Semester Hours	SPRING SEMESTER	Semester Hours
Electives	10	Evidence	4
		Electives	6
Total	10	Total	10

FOURTH YEAR

FALL SEMESTER	Semester Hours	SPRING SEMESTER	Semester Hours
Trial Practice Court	2	Trial Practice Court	2
Electives	8	Electives	8
Total	10	Total	10

GRADUATE PROGRAM

Degrees of Master of Laws and Doctor of Juridical Science

The administration of justice under law is a matter so vast and complex that some graduates feel the need for further study in order to broaden and deepen their understanding of the law. Others wish to extend their study into rapidly developing specialized fields. Graduate instruction, leading to the degree of Master of Laws, is therefore offered to enable qualified students to attain one or both of these objectives.

The degree of Doctor of Juridical Science is offered for selected students whose aim is to extend still further their studies by pursuing original research in law.

Graduate work is available to evening as well as morning students in order that lawyers in private practice and in government service may engage in advanced study or in original research.

Programs of Study for Foreign Lawyers

Two programs of study are provided to meet the needs of lawyers who come from countries whose legal systems are not based on the English law. For such lawyers, whose aim is to acquire an understanding of our system so that they may work intelligently with its materials and practitioners after returning to their own countries, there is available the degree of Master of Comparative Law. For foreign lawyers, however, who wish to remain in this country to practice law, there is available the degree of Master of Comparative Law (American Practice) with an appropriate program of study. With respect to both programs, the students are not assigned to special classes but work in association with the other students in the regular courses, each student's program being adapted to his individual needs.

Non-Degree Study: Continuing Legal Education

As a result of changes and expansion in various fields of the law many lawyers pursue graduate study in order to keep abreast of current developments. Consequently, an important part of the graduate program is to provide for members of the bar not desirous of becoming degree candidates. The offerings in the field of governmental regulation provide opportunities for specialization. Although third-year and graduate courses are particularly suitable, first-year and second-year courses may be taken in appropriate cases. Members of the bar taking graduate work in this way register as unclassified students or as continuing legal education students.

Research in Public Law

Research in public law is conducted under the supervision of members of the Faculty. The purpose of this research is to furnish means for training specialists in public law, either as government lawyers or as lawyers representing individuals or corporations in cases in which the Government is a party, and to assist in the analysis, clarification, formulation, and improvement of public law, substantive and procedural.

Candidates for the graduate degrees in the Law School and specially qualified seniors may pursue this work.

Requirements for the Degrees

Master of Laws

To be recommended for the degree of Master of Laws (LL.M.) the student must have completed a residence period of not less than two semesters. Such residence should normally be continuous. All requirements for the degree must be completed in this Law School and in a period not exceeding two years after registration for work for the degree. The student must have completed with a minimum average of *B* twenty semester hours in courses listed in the law curriculum as graduate courses except that in appropriate cases third-year courses may be approved for inclusion in the program of study if not previously taken.

Master of Comparative Law

The degree of Master of Comparative Law (M.Comp.L.) is for foreign students who intend to return to their countries. To be recommended for this degree the student must have completed a residence period of not less than one academic year. He must have completed satisfactorily twenty-four semester hours in approved courses in the curriculum of the Law School or of such other departments of the University as the Faculty of the Law School shall approve.

Master of Comparative Law (American Practice)

The degree of Master of Comparative Law, American Practice (M. Comp.L.(Am.Prac.)) is for foreign students who intend to remain in this country. To be recommended for this degree the student must have completed a residence period of not less than one academic year. He must have completed twenty-eight semester hours in approved courses in the curriculum of the Law School with a cumulative average of at least *C*.

Doctor of Juridical Science

To be recommended for the degree of Doctor of Juridical Science (S.J.D.) the student must have completed a residence period of not less than one academic year. He must have pursued a course of study and research designated by his consultative committee and approved by the Committee on Graduate Studies. At the conclusion of his first year of residence, or at such other time as the Committee on Graduate Studies may set, the candidate must pass an oral examination in those fields of study selected by the consultative committee. This examination shall be conducted by the consultative committee and such other members of

the Faculty and qualified experts from other research institutions as may be selected by the Committee on Graduate Studies.

Not later than the date specified in the University calendar the candidate must submit to the Dean one typewritten original and two legible and complete carbon copies of his dissertation in its final form. The dissertation must contain a summary, not to exceed 3,500 words, inserted as an appendix. An additional original typewritten copy of this summary must be submitted for publication. To be acceptable the dissertation must, in the opinion of the examining committee, constitute a substantial contribution to the field of law concerned and be suitable for publication. Additional information will be supplied by the Chairman of the Committee on Graduate Studies.

The summaries of accepted dissertations will be printed in a volume forming a number of the University BULLETIN. The successful candidate for the doctorate is required, before receiving his degree, to pay a fee to cover the expense of printing the summary of his dissertation.

THE SCHOOL OF ENGINEERING

THE FACULTY AND STAFF OF INSTRUCTION*

Martin Alexander Mason, B.S. in Eng., Ing.-Dr., *Dean of the School of Engineering*

Thomas Benjamin Brown, Ph.D., *Professor of Physics*
Richard Norman Owens, Ph.D., C.P.A., *Professor of Business Administration*
†Norman Bruce Ames, M.S., E.E., LL.B., *Professor of Electrical Engineering*
James Henry Taylor, Ph.D., *Professor of Mathematics*
Frank Mark Weida, Ph.D., *Professor of Statistics*
Benjamin Carpenter Cruickshanks, B.S. in M.E., *Professor of Mechanical Engineering*
Florence Marie Mears, Ph.D., *Professor of Mathematics*
Charles Rudolph Naeser, Ph.D., *Professor of Chemistry*
Carl Hugo Walther, B.E., M.C.E., *Professor of Civil Engineering*
Martin Alexander Mason, B.S. in Eng., Ing.-Dr., *Professor of Civil Engineering*
Jack Edward Walters, M.S. in M.E., Ph.D., *Professor of Engineering Administration*
Robert Aaron Hechtman, M.S. in C.E., Ph.D., *Professor of Civil Engineering*
Robert Corbin Vincent, Ph.D., *Professor of Chemistry*
Forest Klaire Harris, Ph.D., *Professorial Lecturer in Electrical Engineering*
Waldo Edward Smith, B.E. in C.E., M.S. in C.E., *Professorial Lecturer in Civil Engineering*
Victor Szebehely, Dr.Eng., *Professorial Lecturer in Mechanical Engineering*
Glen Darwin Camp, Ph.D., *Professorial Lecturer on Engineering Administration*
Robert Irving Sarbacher, Sc.D., E.E., *Professorial Lecturer on Engineering Administration*
Gilbert Chester Jacobus, B.S., M.B.A., LL.B., *Professorial Lecturer on Engineering Administration*

* The President of the University, the Dean of Faculties, the Dean of the School, the Registrar of the University, the Director of Admissions of the University, Professors, Associate Professors, and Assistant Professors constitute the Faculty.
† On leave of absence 1956–57.

Kenneth McClure, M.S., LL.B., *Professorial Lecturer on Engineering Administration*
Rawlings Stine Poole, B.S., *Professorial Lecturer on Engineering Administration*
Ralph Edward Fuhrman, B.S. in C.E., M.S. in Eng., D.Eng., *Professorial Lecturer in Civil Engineering*
Charles Eugene Cutts, M.S. in C.E., Ph.D., *Professorial Lecturer in Civil Engineering*
Raymond Pugh Eyman, C.E., *Associate Professor of Civil Engineering*
Robert Hamilton Moore, Ph.D., *Associate Professor of English*
Charles Edward Greeley, B.S. in M.E., *Associate Professor of Mechanical Engineering*
*John Kaye, M.S. in M.E., *Associate Professor of Mechanical Engineering*
Lewis Slack, Ph.D., *Associate Professor of Physics*
Ernest Frank, B.E.E., M.S. in E.E., Ph.D., *Associate Professor of Electrical Engineering*
Donald Joseph Hanrahan, B.E.E., *Assistant Professor of Electrical Engineering*
Paul Arthur Crafton, B.M.E., M.S., *Lecturer in Mechanical Engineering*
Dwight Edward Shytle, *Lecturer in Electrical Engineering*
Ralph Siegel, B.S. in E.E., *Lecturer in Electrical Engineering*
William Herbert Gossard, A.B., M.S. in E.E., *Lecturer in Electrical Engineering*
William Walter Balwanz, B.E.E., M.S. in E.E., *Lecturer in Electrical Engineering*
Richard Henry Welles, B.C.E., *Lecturer in Civil Engineering*
John Rhoads Broome, B.S., *Lecturer in Mechanical Engineering*
Raphael David Cahn, B.M.E., *Lecturer in Mechanical Engineering*

COMMITTEES†

The Dean's Council‡

1957

Ernest Frank
Raymond Pugh Eyman

1958

James Henry Taylor
Robert Aaron Hechtman

1959

Charles Edward Greeley
Lewis Slack

* On sabbatical leave 1956–57.
† The President of the University and the Dean of the School of Engineering are members ex officio of all committees.
‡ Elected by the Faculty.

Committee on Admissions and Advanced Standing

Benjamin Carpenter Cruickshanks, *Chairman*
Robert Aaron Hechtman — Ernest Frank

Committee on Scholarship

The Dean of the School, *Chairman*

Thomas Benjamin Brown
Benjamin Carpenter Cruickshanks
Robert Aaron Hechtman
James Henry Taylor
Carl Hugo Walther
John Kaye

Committee on Graduate Studies

Thomas Benjamin Brown
Norman Bruce Ames
Carl Hugo Walther
Forest Klaire Harris
John Kaye
Richard Norman Owens
James Henry Taylor
Robert Aaron Hechtman
Victor Szebehely
Keith Harder (Liaison Member)
Mayo Hersey (Liaison Member)

THE ADVISORY COUNCIL

ALLEN VARLEY ASTIN, Ph.D.
Director of the National Bureau of Standards

LYMAN JAMES BRIGGS, Ph.D., Sc.D., LL.D.
Trustee of the University

HUGH LATIMER DRYDEN, Ph.D., Sc.D., D.Eng.
Director of Research of the National Advisory Committee for Aeronautics

RALPH LEON GOETZENBERGER, B.S., E.E.
Vice-President of the Minneapolis-Honeywell Regulator Company

CHARLES HOOK TOMPKINS, D.Eng
President of the Charles H. Tompkins Company; Trustee of the University

DANIEL CHARLES WALSER, B.S.
Consulting Engineer; Former *Chairman of the District of Columbia Board of Registration for Professional Engineers*

The Council is made up of friends of the University who are intimately familiar with the educational needs of the professional community served by the School. The Council is advisory to the Dean of the School of Engineering; it serves the function of relating the School to the educational requirements of the engineering and scientific constituency served by the School.

GENERAL INFORMATION

INTRODUCTORY

The School of Engineering was organized in 1884 as the Corcoran Scientific School. In 1903 that school was combined with Columbian College in the Department of Arts and Sciences. In 1905 the engineering courses were placed under an administrative organization known as the Washington College of Engineering, and in 1909 the name was changed to the College of Engineering and Mechanic Arts. In 1914 the name became the School of Engineering.

Curricula leading to the degrees of Bachelor of Civil Engineering, Bachelor of Mechanical Engineering, and Bachelor of Electrical Engineering are accredited by the Engineers' Council for Professional Development, the recognized accrediting body of the engineering profession.

Objective

The objective of the School of Engineering is to produce graduates who possess knowledge and understanding of the fundamental scientific principles in their fields of study; some skill in their application; and an attitude of responsibility toward society and the engineering profession.

Advisory System

Every student entering the School of Engineering as a degree candidate is assigned a permanent faculty adviser, for the purpose of guiding the educational career of the student, providing assistance in his professional development as an engineer, establishing close relations between the faculty and the student, and furnishing counsel and advice in all phases of the academic career of the student.

Faculty advisers counsel students on their programs of study, the achievement and maintenance of satisfactory scholastic performance, professional development, extra-curricular activity as part of the educational process; and assist the entering student in orientation in the engineering discipline. The adviser represents the student in all cases requiring faculty action.

Students who have not completed 72 semester hours satisfactorily are required to obtain their advisers' approval of programs of study prior to registration.

A student who has not completed the course work specified for the freshman and sophomore years is required to consult his adviser when so directed by the Dean, and to follow the recommendations of his ad-

viser in all academic matters. However, advisers may not deny a student entry into any course or activity to which he is entitled under the regulations of the School of Engineering. Students having junior or senior status are encouraged to consult their advisers. The Dean acts as temporary adviser to entering or transfer students pending assignment of their permanent advisers.

All students are encouraged to discuss college problems with their advisers or instructors at any time; and parents or guardians are invited to consult with the Dean and advisers, in respect to any student problems.

Faculty advisers discharge their counseling duties in accordance with the high principles of their professional responsibility; however, the final responsibility for a student's action lies wholly with the student.

REGULATIONS

Students in the School of Engineering are subject to, and are expected to familiarize themselves with, the regulations concerning ADMISSION, REGISTRATION, FEES AND FINANCES *stated on pages 12–27, and the University regulations stated on pages 46–54.*

AMOUNT OF WORK

Eighteen semester hours, including the physical education requirement, constitute normal full-time work. Nine semester hours constitute normal part-time work.

A full-time student who is not on probation may take ordinarily not more than nineteen semester hours. A student employed more than twenty-four hours a week, who is not on probation, may take ordinarily not more than ten semester hours. A student whose quality-point index is 3.00 or higher may be permitted by the Dean to exceed these limits by not more than two semester hours.

A student previously unemployed who accepts employment subsequent to registration or at any time during a semester is required to report that fact immediately to the Dean, in order that adjustments in schedule may be made, if necessary, to bring his program within the Faculty's limitations upon the amount of work to be carried by an employed student.

ATTENDANCE

The student is expected to attend every meeting of the course in which he is registered, fully prepared to carry on the work required. The student is held responsible for all work in the course, and all absences must be excused before provision will be made for him to make

up the work missed. Excuses for absences from examinations which have been announced in advance can be obtained only by making written application to the instructor in charge of the course.

Changes in Program of Studies

In addition to the general University regulations on pages 48–49, the following regulations apply to students in the School of Engineering:

During the seven days following the first day of classes of a semester, additional courses may be added to the student's program with the approval of the instructor, the student's adviser, and the Dean.

During the thirty-five days following the first day of classes, courses may be dropped with the approval of the student's adviser and the Dean, and without academic penalty. Withdrawal from a course without the approval of the student's adviser entails a penalty of failure in the course.

Withdrawal from a course, without academic penalty, may be authorized by the Dean at any time upon presentation of written evidence of extenuating circumstances.

THE BACHELOR'S DEGREES

The Bachelor's degrees are Bachelor of Civil Engineering, Bachelor of Electrical Engineering, Bachelor of Mechanical Engineering, and Bachelor of Science in Engineering.

The degree of Bachelor of Science in Engineering may be earned with any of the following options: Business Administration, Chemistry, Economics, Machine Computer, Mathematics, Physics, or Statistics.

REQUIREMENTS FOR THE DEGREES

Scholarship

The system of grading and computing scholarship is described in detail on pages 46 and 47.

In order to graduate, a student must have a quality-point index of at least 2.00 in all work taken at The George Washington University, and, in addition, a quality-point index of at least 2.00 in all work accepted for the degree in the School of Engineering.

Probation.—A student must maintain a quality-point index of at least 2.00, or be placed on probation. A student remains on probation as long as his quality-point index is below 2.00, or until his probation is removed by the Committee on Scholarship.

Probation is imposed for the amount of time required to complete a minimum of twelve additional semester hours or for one semester, whichever is greater. In certain circumstances the period of probation may be

extended. A student on probation may not hold office or participate in the activities of any student organization or represent the School in any undergraduate competition.

Students placed on probation for scholastic deficiency are required to complete diagnostic counseling tests and remedial study as prescribed by the Committee on Scholarship.

Suspension.—A student who has a quality-point index below 1.00 will be suspended. A student who becomes subject to probation for the third time, whether successive or after an interval, will be suspended.

A student suspended for poor scholarship may apply for readmission after an interval of one calendar year. He must then submit evidence to the Dean's Council that during his absence from the University he has so conducted himself as to indicate that he will profit by readmission and, in addition, must complete diagnostic counseling tests and remedial study as prescribed by the Committee on Scholarship. A student suspended twice for poor scholarship will not be readmitted.

The foregoing scholarship regulations are applied when a student has completed a minimum of twelve semester hours of work. Thereafter, the regulations are applied in multiples of twelve semester hours.

Use of Correct English

Any student whose use of English in any course whatever is deemed unsatisfactory may be reported by the instructor to the Dean's Council. The Council may assign supplementary work, without academic credit, varying in amount with the needs of the student. If the work prescribed is equivalent to a course, the regular tuition fee is charged. The granting of a degree may be delayed for failure to make up any such deficiency in English to the satisfaction of the Dean's Council.

The foregoing regulation applies to both written and spoken English.

Residence

For the Bachelor's degrees, a minimum of one year or thirty-six semester hours must be completed in residence. Summer work may be counted in residence, but in no case may the period of residence aggregate less than thirty weeks. Unless special permission is granted by the Dean to pursue work elsewhere, the work of the senior or final year must be completed in residence.

Curriculum Requirements

The satisfactory completion of one of the following curricula is required.

Physical Education is required of all students in the freshman and sophomore years. (See "Physical Education Requirements", pages 49–50.)

Variations from the prescribed curricula may be made, with the permission of the Dean's Council. A student desiring to omit a required course and substitute another must make written application to the Dean presenting satisfactory reasons for the substitution; and written approval must be obtained before registration for the course.

A student who is absent from the University for one semester or more (except on national service leave) is required to satisfy the curriculum requirements existing at the time of his return.

FRESHMAN YEAR (FOR ALL ENGINEERING CURRICULA)

		Semester Hours
Chem. 11–12	General Chemistry	8
•Engl. 1,2	English Composition	6
Math. 12	Analytic Geometry	3
Math. 19	Differential Calculus	2
ME 3	Mechanical Drawing	2
ME 4	Descriptive Geometry	2
ME 5	Orientation and Engineering Problems	2
ME 6	Engineering Problems	2
Phys. Ed.	See pages 49–50 for statement of requirement.	
†Phys. 6 and 7	General Physics	6
	Total	34

ROTC.—Air Force ROTC students substitute Air Science 1–2 and A (6) for Physical Education 1–2 (2).

SOPHOMORE YEAR (FOR ALL ENGINEERING CURRICULA)

		Semester Hours
Phys. 8	General Physics	3
Phys. 55	Physical Measurements	1
Math. 20	Integral Calculus	3
Math. 103	Calculus and Differential Equations	3
CE 12	Surveying	2
CE 21	Analytical Mechanics: Statics	3
CE 22	Analytical Mechanics: Dynamics	3
EE 11	Fundamentals of Electrical Engineering	3
EE 12	Electrical Machinery	3
Speech 1	Effective Speaking	3
Elective	Approved non-technical electives (for B.C.E., B.E.E., and B.S. in Eng. candidates)	6

• Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those students who show marked superiority may, upon passing further tests, be exempted from one or both semesters of the English Composition course; those who are inadequately prepared for English 1 will be assigned to English A, for which credit will be given unless it is used to satisfy entrance requirements.

† The student who begins Physics with Physics 6 or 7, is subject to a qualifying examination. Credit will be given for Physics 5 if not used for entrance requirements.

ME 13–14	Mechanism (for B.M.E. candidates only)	6
Phys. Ed.	See pages 49–50 for statement of requirement.	
	Total	36

ROTC.—Air Force ROTC students substitute Air Science 51–52 and A (6) for Physical Education 11–12 (2), Speech 1 (3), and the non-technical elective in all curricula except Mechanical Engineering. Mechanical Engineering candidates replace the non-technical elective with Civil Engineering 12.

Bachelor of Civil Engineering

JUNIOR YEAR

		Semester Hours
CE 123	Strength of Materials	3
CE 125	Engineering Materials	3
CE 127	Soil Mechanics	3
CE 132	Fluid Mechanics	4
CE 143–44	Structural Theory and Design I and II	6
CE 164	Transportation Engineering	3
ME 111–12	Thermodynamics	6
Phys. 132	Electronics	3
EA 105	Engineer and Society	2
*Elective	Non-technical Elective	3
	Total	36

ROTC.—Air Force ROTC students substitute Air Science 101–2 (6) for Elective (3).

SENIOR YEAR

		Semester Hours
Math 112	Mathematics for Engineers and Scientists	3
CE 135	Hydraulic Engineering	3
CE 138	Sanitary Engineering	3
CE 145	Steel and Timber Structures	3
CE 146	Concrete Theory and Design	3
CE 153	Structural Analysis	3
CE 154	Advanced Dynamics	3
CE 167	Regional and Urban Planning	3
CE 186	Engineering Contracts and Specifications	2
EA 211	Communication of Ideas	3
*Elective	Non-technical Elective	6
	Total	36

ROTC.—Air Force ROTC students substitute Air Science 151–52 (6) for Elective (3).

* Credit is not given for courses elected in Physical Education or Secretarial Studies.

Bachelor of Electrical Engineering

JUNIOR YEAR

		Semester Hours
EE 107	Alternating-Current Circuits	3
EE 109	Alternating-Current Machinery	3
EE 110	Communication Engineering	3
EE 111–12	Electrical Measurements	4
EE 113–14	Electric Power Laboratory	4
ME 111–12	Thermodynamics	6
Phys. 132	Electronics	3
Econ. 1–2	Principles of Economics	6
*Elective		4
	Total	36

ROTC.—Air Force ROTC students substitute Air Science 101–2 (6) for Elective (4).

SENIOR YEAR

		Semester Hours
CE 123	Strength of Materials	3
CE 132	Fluid Mechanics	4
EE 123–24	Communications Laboratory I and II	4
EE 127	Electric Transients	3
EE 128	Control System Analysis	3
EE 131–32	Electric Power Systems	4
EE 135–36	Field Theory I and II	6
EE 137	Applied Electronics	3
EE 189–90	Proseminar in Electrical Engineering	2
EA 105	Engineer and Society	2
	Total	34

ROTC.—Air Force ROTC students substitute Air Science 151–52 (6) for Electrical Engineering 189–90 (2) and Engineering Administration 105 (2).

Bachelor of Mechanical Engineering

JUNIOR YEAR

		Semester Hours
CE 123	Strength of Materials	3
CE 125	Engineering Materials	4
CE 132	Fluid Mechanics	3
ME 111–12	Thermodynamics	4
ME 141–42	Management Problems	3
Phys 132	Electronics	3
Econ. 1–2	Principles of Economics	6
*Elective		5
	Total	35

ROTC.—Air Force ROTC students substitute Air Science 101–2 (6) for Elective (3).

* Credit is not given for courses elected in Physical Education or Secretarial Studies.

SENIOR YEAR

		Semester Hours
ME 115–16	Mechanical Laboratory	4
ME 126	Methods of Manufacture	2
ME 127–28	Machine Design	4
ME 129–30	Power Plants	6
ME 131–32	Heating, Ventilating, Air Conditioning, and Refrigeration	4
ME 133	Combustion Engines	2
ME 139	Fluid Dynamics	3
ME 140	Mechanical Vibrations	3
ME 189–90	Proseminar in Mechanical Engineering	2
*Elective		4
	Total	34

ROTC.—Air Force ROTC students substitute Air Science 151–52 (6) for Elective (4).

Bachelor of Science in Engineering

JUNIOR YEAR

		Semester Hours
CE 123	Strength of Materials	3
CE 125	Engineering Materials	3
CE 132	Fluid Mechanics	4
CE 186	Engineering Contracts and Specifications	2
ME 111–12	Thermodynamics	6
Phys 132	Electronics	3
Econ 1–2	Principles of Economics	6
ME 141–42	Management Problems	4
EA 125	Engineer and Society	2
*Elective		3
	Total	36

ROTC.—Air Force ROTC students substitute Air Science 101–2 (6) for Elective (3).

SENIOR YEAR

Thirty-four semester hours as approved by the department of the option and the Dean of the School of Engineering.

ROTC.—Air Force ROTC students substitute Air Science 151–52 (6) for Elective course (3) as approved by the Dean of the School of Engineering.

* Credit is not given for courses elected in Physical Education or Secretarial Studies.

The Bachelor of Science in Engineering curriculum provides training in the basic physical principles employed in engineering and in engineering methods of analysis, and in addition, offers an opportunity for study in optional fields in which the student has special interest.

Optional study can be selected from the fields of Business Administration, Chemistry, Economics, Machine Computer, Mathematics, Physics, or Statistics. The program of study in the option is formulated by the department concerned in conference with the student. The program, bearing the approval of the department concerned, must be submitted by the student to the Dean's Council for approval before the beginning of the senior year. During the period of optional study the student must comply with such regulations as the department concerned may prescribe.

The following curricula are recommended, for the guidance of students, by the several departments in which optional study is available. Variations from these curricula to satisfy the exceptional needs of individual students may be made by the department concerned.

BACHELOR OF SCIENCE IN ENGINEERING OPTIONAL CURRICULA

		Semester Hours
Business Administration Option		6
Acct. 1–2	Introductory Accounting	3
Bus. Adm. 101	Business Organization and Combination	3
Bus. Adm. 131	Business Finance	3
Bus. Adm. 161	Commercial Law: Contracts, Sales, Agency, and Bailments	
Elective	Fifteen semester hours to be selected from the following:	
	Acct. 101: Cost Accounting	
	Acct. 111: Financial Statement Analysis	
	Acct. 191: Business Budgeting	
	Bus. Adm. 105: Personnel Management in Industry	
	Bus. Adm. 106: Problems in Personnel Management	
	Bus. Adm. 109: Office Management	
	Bus. Adm. 121: General Insurance	
	Bus. Adm. 141: Principles of Marketing	
	Bus. Adm. 145: Sales Management	
	Bus. Adm. 150: Principles of Purchasing	
	Econ. 121: Money and Banking	
	Econ. 171: Economics of Transportation	
	Econ. 172: Economics of Public Utilities	
	Stat. 111: Business and Economic Statistics	
Chemistry Option		4
Chem. 21	Qualitative Inorganic Analysis	4
Chem. 22	Quantitative Inorganic Analysis I	6
Chem. 111–12	Physical Chemistry Lectures	4
Chem. 113–14	Physical Chemistry Laboratory	4
Chem. 122	Quantitative Inorganic Analysis II	

Chem. 135	Inorganic Chemistry: Preparations	
or 155	Organic Chemistry: Preparations	2
Chem. 151–52	Organic Chemistry	8
Elective	Two years of German recommended	12

Economics Option

Econ. 101–2	Economic Analysis	6
Econ. 105	Business Cycles	3
Econ. 121	Money and Banking	3
Econ. 141–42	Labor Economics	6
Stat. 111	Business and Economic Statistics I	3
Stat. 112	Business and Economic Statistics II	3
Elective	Economics, Statistics, or Business Administration selected with the approval of the Department of Economics	6

Machine Computer Option
(Junior Year)

ME 111–12	Thermodynamics	6
CE 123	Strength of Materials	3
CE 132	Fluid Mechanics	4
EE 107	Alternating-Current Circuits	3
Phys. 132	Electronics	3
Stat. 157–58	Mathematical Statistics	6
Math. 112	Mathematics for Engineers and Scientists	3
Math. 265	Modern Algebra	3
*Elective		6

(Senior Year)

ME 141–42	Management Problems	4
Phys. 133	Electronic Circuits	3
EE 110	Communication Engineering	3
EE 123	Communications Laboratory I	2
EE 137	Applied Electronics	3
EE 171	Modern Computing Machines	3
EE 172	Machine Computer Circuitry	3
Math. 126	Advanced Analytic Geometry	3
Math. 143–44	Numerical Analysis	6
*Elective		3

Mathematics Option

Fifteen semester hours of mathematics beyond calculus, in second- and third-group courses.

Physics Option

Math. 132	Differential Equations	3
Phys. 106	Optics	3

* Credit is not given for courses elected in Physical Education or Secretarial Studies.

Phys. 113	Atomic Physics	3
Phys. 155 or 156	Advanced Physical Measurements	3
Elective	Six hours to be selected from the following:	
	Physics 102: Heat and Thermodynamics	
	Physics 114: Statistical Physics	
	Physics 118: Introduction to Solid State Physics	
	Physics 123: Nuclear Physics	
	Physics 128: Sound	
	Physics 133: Electronic Circuits	
	Physics 141: Electromagnetic Waves	
	Physics 191: Nuclear Reactors	

Statistics Option

Stat. 91–92	Principles of Statistical Methods	6
Stat. 117	Analysis of Variance	3
Stat. 118	Correlation and the Chi-Square Test	3
Stat. 155–56	Mathematical Probability	6
Stat. 157–58	Mathematical Statistics	6

Graduate Record Examinations

During the final semester of the senior year students in the School of Engineering are required to take the following Graduate Record Examinations: the Aptitude Test, which provides a measure of general scholastic ability at the graduate level; and the Advanced Test (Engineering) designed to measure the achievement of the college senior in his major field of study. (For further information concerning the Graduate Record Examinations, see page 51.)

THE MASTER'S DEGREES

The Master's degrees are Master of Science in Engineering and Master of Engineering Administration.

THE DEGREE OF MASTER OF SCIENCE IN ENGINEERING

Upon the satisfactory completion of the requirements of the School of Engineering the degree of Master of Science in Engineering is conferred. The discipline of this degree is designed to lead to a mastery of scientific principles and methods as they are applied in engineering. It is conceived that this objective can be served best by providing a relationship in which the intellectual needs and desires of the student are an important element in determining the curriculum. To this end the responsibility for the student's program of study is established in a Committee on Graduate Studies composed of members of the University Faculty and specialists selected from the engineering profession. Programs of study are prescribed for each candidate by the Committee on

Graduate Studies or an assigned adviser, in accordance with his state of knowledge and needs, and as required to achieve the objective of mastery of principles and methods. These programs are not curricula common to all candidates for the degree. They may consist of formal courses, independent study, or individual study under assigned faculty, and may include work in several departments and fields of study.

Admission to Candidacy

Application for admission to candidacy for the degree must be submitted to the Office of the Director of Admissions on the form prescribed by that Office. Applicants will be advised by the Committee on Graduate Studies of the time and place of the required personal interview.

Applicants are required to satisfy the Committee of their capacity for productive study in the discipline and must have acceptable personal qualities. Applicants with Bachelor's degrees from recognized institutions and with records which, in the opinion of the Committee on Graduate Studies give evidence of adequate preparation for graduate study may be admitted to candidacy for a graduate degree. Applicants who do not hold a satisfactory Bachelor's degree in engineering, or whose adequacy of preparation is questioned may be admitted to candidacy upon successful completion of a qualifying examination prescribed by the Committee.

Advanced Standing

Graduate study completed prior to admission to candidacy for the graduate degree in the School of Engineering will be considered by the Committee on Graduate Studies in prescribing the candidate's program of study provided it contributes substantially to the achievement of mastery of principles and methods. In any case a minimum of one year full-time study must be completed under the Committee on Graduate Studies.

Requirements for the Degree

The candidate for the degree must complete a minimum of one year of full-time study, or the equivalent in part-time study, under the guidance of the Committee on Graduate Studies; complete the program prescribed by that Committee, including course examinations; and demonstrate, by passing a comprehensive examination, substantial mastery of scientific principles and methods of their use in the area of his interest. This examination may be written, oral, or both, at the discretion of the Committee.

Candidates with limited areas of unsatisfactory preparation may be

required to complete additional necessary remedial or preparatory study.

All of the work applied toward this degree must be accomplished under the guidance of the Committee on Graduate Studies.

Course work applied to satisfy requirements for another degree may not be applied to satisfy requirements for the graduate degree in engineering.

With the approval of the Committee on Graduate Studies the candidate may include a thesis in his program. He will be subject to an oral examination on his thesis.

The candidate's scholarship must be satisfactory to the Committee, and will commonly be required to be equivalent to the grade of *B*. A student whose work is unsatisfactory will be suspended by the Dean, upon the recommendation of the Committee on Graduate Studies or the student's assigned adviser.

The candidate must complete the requirements for the degree within three years, if he is a full-time student; within five years, if he is a part-time student.

THE DEGREE OF MASTER OF ENGINEERING ADMINISTRATION

Upon the satisfactory completion of the requirements of the School of Engineering the degree of Master of Engineering Administration is conferred. The purpose of this program is to offer, through academic study at graduate level, a means of improving the management and administrative ability of government and industrial engineers and scientists.

The objective of this graduate discipline is to develop a mastery of management principles and practices as they apply in the administration of engineering and scientific activities. Knowledge and understanding are sought rather than breadth of familiarity with techniques.

Study programs are prescribed for each candidate, in accordance with his preparation and objective, by the Committee on Graduate Studies. These programs are not curricula common to all candidates for the degree. They may consist of formal courses, independent study, or individual study under assigned faculty, and move freely among departments and fields of study. Each candidate is under the personal guidance of a selected faculty member.

Admission to Candidacy

Applications for admission to candidacy for the degree must be submitted to the Office of the Director of Admissions on the form prescribed by that Office. Applicants will be advised by the Committee on Graduate Studies of the time and place of the required personal interview.

Applicants are required to satisfy the Committee of their capacity for

productive study in the discipline; must have acceptable personal qualities; must hold a Bachelor's degree in engineering or science from a recognized institution; must have had some supervisory or administrative experience; and give evidence of preparation, which in the opinion of the Committee on Graduate Studies is adequate for graduate study.

Applicants who lack a satisfactory Bachelor's degree or whose adequacy of preparation is questioned may be admitted to candidacy upon passing qualifying examinations prescribed by the Committee. Applicants lacking satisfactory supervisory or administrative experience may, under certain circumstances, be considered by the Committee.

Advanced Standing

Graduate study completed prior to admission to candidacy for the degree will be considered in prescribing the program of study, provided it contributes substantially to the achievement of the objective of the discipline. In any case a minimum of one year full-time study must be completed under the Committee on Graduate Studies.

Study applied to satisfy the requirements for another degree may not be applied toward the degree of Master of Engineering Administration.

Requirements for the Degree

The candidate for the degree of Master of Engineering Administration must successfully complete a minimum of one year full-time study, or the equivalent in part-time study, as prescribed by the Committee on Graduate Studies, including course examinations; pass a comprehensive examination on his area of study; and solve a comprehensive problem in engineering administration. At the discretion of the Committee the examination may be written, oral, or both. Candidates with limited areas of unsatisfactory preparation may be required to complete necessary remedial study in addition to their graduate programs.

The candidate's scholarship must be satisfactory to the Committee, and will commonly be required to be equivalent to the grade of *B*. A student whose work is unsatisfactory will be suspended by the Dean upon the recommendation of the Committee or the adviser.

The problem which each candidate is required to solve may be proposed by the student, but it must be approved by the Committee. Its purpose is to demonstrate the candidate's ability to integrate his studies in the solution of a typical administrative problem of a comprehensive nature, requiring for its solution knowledge of a variety of principles and procedures. The candidate is subject to an oral examination on his problem at the discretion of the Committee.

The work for the degree, including the comprehensive examination,

must be completed within three years by a full-time student, or within five years by a part-time student.

THE PROFESSIONAL DEGREES

The professional degree of Civil Engineer, Electrical Engineer, or Mechanical Engineer may be conferred upon a graduate of the School of Engineering who has demonstrated his professional ability.

Requirements for the Degree

1. Application may not be made sooner than three years after graduation, and then only if the candidate has had definite responsibility for engineering work of substantial importance.

2. A detailed statement of the candidate's experience, references, the degree sought, and the title of the dissertation must be filed with the Dean eight months before the Commencement at which the degree is to be conferred.

Detailed information concerning the preparation of the dissertation may be obtained from the Office of the Dean.

3. The dissertation will be read for acceptance by an examining committee appointed by the Dean to include members of the Faculty of the School of Engineering and at least one expert from engineering practice. The committee will report its recommendation to the Faculty of the School of Engineering.

THE SCHOOL OF PHARMACY

THE FACULTY AND STAFF OF INSTRUCTION •

Charles Watson Bliven, M.S., *Dean of the School of Pharmacy*

Ralph Dale Kennedy, Ph.D., *Professor of Accounting*
Ira Bowers Hansen, Ph.D., *Professor of Zoology*
Charles Watson Bliven, M.S., *Professor of Pharmacy*
Alan Thomas Deibert, A.M., *Professor of Romance Languages*
Chester Elwood Leese, Ph.D., *Fry Professor of Physiology*
Calvin Darlington Linton, Ph.D., *Professor of English Literature*
Carleton Raymond Treadwell, Ph.D., *Professor of Biochemistry*
George Martin Koehl, A.M., *Professor of Physics*
Robert Corbin Vincent, Ph.D., *Professor of Chemistry*
Mary Louise Robbins, Ph.D., *Associate Professor of Bacteriology*
Salvatore Joseph Greco, Ph.D., *Associate Professor of Pharmacy*
Robert Meyer Leonard, Ph.D., *Associate Professor of Pharmacology and Pharmacognosy*
John Gilbert Palmer, Ph.D., *Assistant Professor of Botany*
Franklin Dero Cooper, M.S., *Assistant Professor of Hospital Pharmacy*
Carson Gray Frailey, A.B., LL.B., *Lecturer on Pharmaceutical Law*

Special Lecturers

William Paul Briggs, M.S., Sc.D., LL.D., *Executive Director and Secretary, American Foundation for Pharmaceutical Education;* Pharmacy Training

Frederick John Cullen, Phar.G., M.D., *Executive Vice-President, The Proprietary Association;* Drug Manufacture

John Christian Krantz, Jr., Ph.D., *Professor of Pharmacology, University of Maryland;* Pharmaceutical Research

Justin Lawrence Powers, Ph.D., *Chairman, Committee on National Formulary, American Pharmaceutical Association;* Official Drug Standards

Robert Philip Fischelis, B.S., Phar.D., Sc.D., *Secretary and General Manager, American Pharmaceutical Association;* Pharmaceutical Organizations

Daniel Lamont Seckinger, M.D., Dr.P.H., *Director of Public Health, District of Columbia:* Hygiene and Sanitation

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• The President of the University, the Dean of Faculties, the Dean of the School, the Registrar of the University, the Director of Admissions of the University, Professors, Adjunct Professors, Associate Professors, Assistant Professors, and Instructors constitute the Faculty.

PGad Bryan Morehouse, A.B., LL.B., LL.M., *Assistant General Counsel in Charge of Compliance, Federal Trade Commission;* Drug Trade Regulation

Louis Edward Kazin, Ph.G., *Associate Editor, Drug Topics;* Contemporary Pharmacy

Nevis Eugene Cook, B.S., in Phar., *Assistant to the Commissioner of the Food and Drug Administration;* Drug Control

Karl Bambach, Ph.D., *Executive Vice-President, American Drug Manufacturers Association;* Pharmaceutical Industry

COMMITTEES*

The Dean's Council†

Ralph Dale Kennedy — Ira Bowers Hansen

Salvatore Joseph Greco

Committee on Scholarship

Robert Corbin Vincent, *Chairman*

Mary Louise Robbins — Robert Meyer Leonard

ADVISORY COMMITTEE

Irving Alexander Tennyson, *Chairman*

Howard Bradbury — William Paul Briggs

Harold Clayton Kinner — Fred Royce Franzoni

GENERAL INFORMATION

INTRODUCTORY

In 1867 the foundation for the National College of Pharmacy was laid by the Apothecaries' Association of the District of Columbia. The College was opened in 1872 and continued until 1906, when it became affiliated with The George Washington University.

The School of Pharmacy is accredited by the American Council on Pharmaceutical Education as a class "A" school. It is a member of the American Association of Colleges of Pharmacy.

Washington offers many opportunities for the student of pharmacy. The American Institute of Pharmacy, the headquarters of the American Pharmaceutical Association, is only a few blocks from the School of Pharmacy. The institute also houses a pharmaceutical museum, a library,

* The President of the University and the Dean of the School of Pharmacy are members ex officio of all committees.

† Elected by the Faculty.

and research laboratories. Government agencies and laboratories whose activities are closely allied to pharmacy, and the government libraries, the facilities of which are open to the student, are readily accessible.

The Institute and the Federal Government bring to Washington leaders in the fields of pharmacy, many of whom present to senior students in the School of Pharmacy current professional information.

The objectives of the School of Pharmacy are (1) to train professionally competent pharmacists, primarily for retail practice, and to help them acquire specialized training, a general education, and an attitude of responsibility to their profession and to society; (2) to promote the health profession of pharmacy in general, and particularly within the community.

To achieve these objectives the School has developed a systematic plan of instruction for the professional courses which is integrated with the liberal arts program. It further encourages student participation in university, professional, and civic organizations and activities which increase professional competence, raise professional standards, and help develop social responsibility.

REGULATIONS

Students in the School of Pharmacy are subject to and are expected to familiarize themselves with the regulations concerning ADMISSION, REGISTRATION, FEES AND FINANCES *as stated on pages 12–27, and the University regulations stated on pages 46–54.*

Students registered in the Junior College Pharmacy curriculum are subject to the regulations of the Junior College. However, in the professional courses of that curriculum, the attendance requirements of the School of Pharmacy prevail.

AMOUNT OF WORK

Normal work for any year is that outlined under the head of "Curriculum Requirements", below. A student who wishes to take more than the normal amount of work may do so only with the permission of the Committee on Scholarship, the members of which are guided in their decision by the scholastic record and the extent to which he is employed. A student on probation is limited in the number of semester hours he may carry.

The student is not encouraged to undertake outside employment while attempting a full course of study. A student who maintains a quality-point index of 2.00 or higher for all courses and a quality-point index of 2.50 or higher for pharmacy courses may be granted permission by the Dean to undertake outside employment. The amount of the employment

permitted is governed by the scholarship record of the student and the number of semester hours for which he is registered.

A student previously unemployed who accepts employment subsequent to registration or at any time during a semester is required to report that fact immediately to the Dean.

Attendance

Except by special permission of the instructor, credit will not be given for any pharmacy course if absences, including both lecture and laboratory, exceed in number for each semester the hours of credit for the semester. If a course has distinct divisions such as lectures, laboratories, or recitations, the absences apply pro rata to such divisions.

EXAMINATIONS BEFORE STATE BOARDS OF PHARMACY

To be eligible for examination before state boards of pharmacy, the applicant is required to present satisfactory evidence of graduation from a college of pharmacy. In addition, most states require that the applicant have one year of practical experience in a pharmacy. This experience may not be gained concurrently with the school year.

THE DEGREE OF BACHELOR OF SCIENCE IN PHARMACY

Upon the satisfactory completion of the requirements of the School of Pharmacy, the degree of Bachelor of Science in Pharmacy is conferred.

REQUIREMENTS FOR THE DEGREE

Scholarship

The system of grading and of computing scholarship is described in detail on pages 46 and 47.

In order to graduate, a student must have a general quality-point index of at least 2.00. In addition, he must have a quality-point index of at least 2.50 in all pharmacy courses.

Probation.—A student must maintain a general (over-all) quality-point index of 2.00 and a pharmacy quality-point index of 2.50 or be placed on probation.

The following scholarship rules on general quality-point index are applied when a student has undertaken a multiple of nine semester hours. The rules on pharmacy quality-point index are applied when a student has completed 12 pharmacy semester hours and thereafter are applied in multiples of 9 hours.

First Probation.—A student is placed on first probation when his gen-

eral quality-point index is below 2.00 *or* his pharmacy quality-point index is below 2.50. (See also under Suspension.)

Second Probation.—A student who has a general quality point index below 2.00 *or* a pharmacy quality-point index below 2.50 after a multiple of nine semester hours is placed on second probation. However, a student who has a general quality-point index between 1.50 and 2.00 will be considered by the Committee on Scholarship. A student who has a pharmacy quality-point index between 2.20 and 2.50 will be considered by the Committee. In each case, the Committee may retain him on probation or suspend him.

Suspension.—A student who has a general quality-point index below 1.50 or a pharmacy quality-point index below 2.20 will be suspended: however, a student who has a general quality-point index between 1.40 and 1.50 will be considered by the Committee on Scholarship. A student who has a pharmacy quality-point index between 2.00 and 2.20 will be considered by the Committee. In each case, the Committee may retain him on probation or suspend him.

A student who is subject to probation for the third time, whether successive or after an interval, will be suspended. In considering a student for suspension, the rules on probation shall apply to either the general *or* the pharmacy quality-point index with probations for each index independent of the other index.

A student suspended for poor scholarship may apply for readmission after an interval of a calendar year. He must then submit evidence to the Dean of the School of Pharmacy that during his absence from the University he has so conducted himself as to indicate that he will profit by readmission. A student suspended twice for poor scholarship will not be readmitted.

Curriculum

The Junior College Pharmacy curriculum (see pages 67-68) comprises the first two years of the four-year pharmacy course. The curriculum is established by the faculties of the School of Pharmacy and the Junior College in accordance with the professional needs, and complies, in so far as possible, with the latter group regarding the general cultural studies.

The laboratory method of teaching is used. Recitation classes are held in connection with each course in order to provide systematic drill in the subjects.

The curriculum requirements include at least 137 semester hours. The following curriculum leads to the degree of Bachelor of Science in Pharmacy.

Freshman and Sophomore Years

Courses	Did. hrs.*	Lab. hrs.*	Sem. hrs.	Clock hrs.*
Courses in the Junior College (see page 68).....	880	656	73	1536

Junior Year: Fall Semester

Courses	Did. hrs.	Lab. hrs.	Sem. hrs.	Clock hrs.
Chemistry 21.....	32	96	4	128
Pharmacy 101.....	32	48	3	80
Pharmacy 105.....	32	....	2	32
Pharmacy 107.....	48	....	3	48
Physiology 115.....	48	....	3	48
Physiology 117.....	....	48	1	48
Total.....	192	192	16	384

Junior Year: Spring Semester

Bacteriology 112.....	48	96	4	144
Chemistry 22.....	32	96	4	128
Pharmacy 102.....	32	96	4	128
Pharmacy 106.....	32	....	2	32
Pharmacy 110.....	48	....	3	48
Total.....	192	288	17	480

Senior Year: Fall Semester

†Biochemistry 221.....	32	96	4	128
Pharmacy 103.....	48	96	4	128
Pharmacy 111.....	16	48	1	80
Pharmacy 165.....	32	....	1	48
Elective	32	96	3	112
Total.....	160	336	17	496

* Exclusive of Physical Education.

† Students planning to do graduate work may request the substitution of other courses for Biochemistry 221–22 if these courses will be included in the graduate curriculum.

Senior Year: Spring Semester

Courses	Did. hrs.	Lab. hrs.	Sem. hrs.	Clock hrs.
Bacteriology 210	32	....	2	32
*Biochemistry 222	32	96	4	128
Pharmacy 166	32	64	3	96
Pharmacy 176	32	....	2	32
Pharmacy 178	64	....	4	64
Pharmacy 188	48	....	1	48
Pharmacy 190	16	....	1	16
Pharmacy 192	....	48	1	48
Total	256	208	18	464
Grand Total	1680	1680	137	3360

THE DEGREE OF MASTER OF SCIENCE IN PHARMACY†

Upon the satisfactory completion of the graduate requirements of the School of Pharmacy, the degree of Master of Science in Pharmacy is conferred.

Definition of the Master's Work

The study leading to the degree of Master of Science in Pharmacy is a comprehensive survey of one or more of the fields of knowledge embraced by Pharmacy. It is a continuation of the work of the student's undergraduate major and involves a greater acquaintance with scholarly method.

The student must satisfy certain minimum requirements as to previous preparation, residence, ability to read an approved modern foreign (European) language, and courses taken; but these requirements, while essential, are regarded primarily as qualifying measures. The student's knowledge of his field, as demonstrated by his thesis and by the results of his Master's examination (together with such other examinations involving special skills or techniques as may be required), is the basis upon which the Master's degree is conferred. The foreign language requirement may be waived by faculty action in the instance of students whose field of study at the Master's level may not require such preparation.

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* Students planning to do graduate work may request the substitution of other courses for Biochemistry 221–22 if these courses will be included in the graduate curriculum.
† Courses applicable to this degree are not offered in 1956–57.

REQUIREMENTS FOR THE DEGREE

Residence

An academic year of residence is required, i.e., completion of a minimum of thirty semester hours of work including the thesis, which is counted as the equivalent of six semester hours of course work. Summer work may be counted in residence, but in no case may the period of residence aggregate less than twenty-seven weeks. Not more than twelve semester hours (which must be approved in advance by the Dean of the School of Pharmacy) may be taken in another school or division of this University, and such work may not be counted toward both a degree in that school or division and the Master's degree in the School of Pharmacy.

Amount of Work

A student whose previous preparation in his chosen field has been adequate may complete his requirements, including the thesis, by a minimum of thirty semester hours; others are required to do additional work. First-group courses may not be credited toward the Master's degree. Pharmacy courses numbered below 200 may be credited toward the Master's degree only when registration for graduate credit has been approved at the beginning of the course by the instructor and the Dean of the School of Pharmacy.

Admission to Candidacy

In addition to admission requirements stated on page 19, the applicant for admission to candidacy for the Master's degree must be approved by the appropriate representative of the Department of Pharmacy and by the Dean.

Scholarship

A student whose scholarship is considered unsatisfactory may be suspended by the Dean upon recommendation of the staff member under whom the student is working.

The Master's Thesis

The thesis may be of a research, expository, critical, or creative type. The main purpose of a Master's thesis is to demonstrate the student's ability to make independent use of the information and training acquired through his other disciplines, and to furnish objective evidence of his constructive powers in his chosen field. Registration for the thesis must

be no later than the beginning of the final year of preparation, unless the professor in charge of the thesis permits registration at the beginning of the final semester. The choice of the thesis subject must be approved by the professor in charge of the student's field and recorded in the Office of the Registrar by the date announced in the University calendar. Registration for the thesis is ordinarily made on the basis of three semester hours for two successive semesters. In exceptional cases, and with the approval of the professor in charge of the thesis, the student may register for the entire six semester hours during a single semester. The typewritten thesis in its final form must have the approval of the professor in charge of the student's field and must be presented to the Dean by the student not later than the date announced in the University calendar. Requirements regarding the form of the thesis are stated on pages 51–52, and additional information will be supplied by the Dean.

Payment of tuition for the thesis entitles the candidate, during the academic year of registration, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished, an additional successive academic year may be granted without further tuition payment. If the preparation of the thesis extends beyond the two-year period the student must register for it again, and pay tuition on the same basis as for a repeated course.

Final Examination

In addition to the course examinations, the candidate must pass a final examination on the thesis and its related fields. This examination may be either written or oral at the discretion of the Faculty.

If the thesis is submitted more than three years after the course requirements have been completed, a written examination covering the student's complete program of study will also be required.

THE SCHOOL OF EDUCATION

THE FACULTY AND STAFF OF INSTRUCTION*

†James Harold Fox, A.M., Ed.D., *Dean of the School of Education*
Ralph Windsor Ruffner, A.M., Ed.D., *Assistant Dean of the School of Education*

Henry Grattan Doyle, A.M., LL.D., Litt.D., *Professor of Romance Languages*
Ruth Harriet Atwell, A.M., *Professor of Physical Education for Women*
Frank Mark Weida, Ph.D., *Professor of Statistics*
Mitchell Dreese, Ph.D., *Professor of Educational Psychology*
†James Harold Fox, A.M., Ed.D., *Professor of Education*
‡Thelma Hunt, Ph.D., M.D., *Professor of Psychology*
Frances Kirkpatrick, A.M., *Professor of Home Economics*
Louis Clark Keating, Ph.D., *Professor of Romance Languages*
William Henry Myers, A.M., *Professor of Physical Education for Men*
Burnice Herman Jarman, A.M., Ed.D., *Professor of Education*
Chester Elwood Leese, Ph.D., *Fry Professor of Physiology*
Helen Bennett Lawrence, A.M., *Professor of Physical Education for Women*
Blake Smith Root, A.M., Ed.D., *Professor of Education*
Ralph Windsor Ruffner, A.M., Ed.D., *Professor of Education*
Joseph Henry Krupa, M.S., Ed.D., *Professor of Physical Education for Men*
Calvin Weir Pettit, Ph.D., *Professor of Speech*
Kathryn Mildred Towne, A.M., *Professor of Home Economics*
Elizabeth Burtner, A.M., *Professor of Physical Education for Women*
Charles Edward Bish, A.M., Ed.D., *Professorial Lecturer in Education*
John Frederick Brougher, A.M., Ed.D., *Professorial Lecturer in Education*
Milo Frederick Christiansen, B.S., M.R., *Professorial Lecturer in Physical Education*
Madaline Kinter Remmlein, Ph.D., J.D., *Professorial Lecturer in Education*
Joseph Bueol Johnson, A.M., Ed.D., *Professorial Lecturer in Education*

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* The President of the University, the Dean of Faculties, the Dean of the School, the Registrar of the University, the Director of Admissions of the University, Professors, Adjunct Professors, Associate Professors, Assistant Professors, and Instructors constitute the Faculty.

† On sabbatical leave spring semester 1956–57.

‡ On sabbatical leave fall semester 1956–57.

Florence Mary Lumsden, A.M., Ed.D., *Professorial Lecturer in Education*
William Samuel Rumbough, A.M., Ed.D., *Professorial Lecturer in Education*
Howard Odin Johnson, A.M., Ed.D., *Professorial Lecturer in Education*
Don Carlos Faith, Ph.D., *Associate Professor of Educational Psychology*
Raymond George Hanken, B.S. in P.E., A.M. in Ed., *Associate Professor of Physical Education for Men*
Mildred Hollander Shott, A.M., *Associate Professor of Secretarial Studies*
Anthony Charles LaBue, B.S., Ed.D., *Associate Professor of Education*
Vincent James DeAngelis, B.S. in P.E., A.M. in Ed., *Associate Professor of Physical Education for Men*
Mary Ellen Coleman, A.M., *Assistant Professor of Education; Director of the Reading Clinic*
Eva Mayne Johnson, A.M., *Assistant Professor of Psychology*
Carol Ruth St. Cyr, Ph.D., *Assistant Professor of Education*
Loretta May Stallings, A.M., *Assistant Professor of Physical Education for Women*
LuVerne Crabtree Walker, A.M., *Lecturer in Education*
Raymond Ray Reed, A.M., *Lecturer in Education*
Eugenia Campbell Nowlin, A.M., *Lecturer in Education*
Grover LaMarr Angel, A.M., Ed.D., *Lecturer in Education*
John Carl Lang, A.M., Ed.D., *Lecturer in Education*
Levin Barton Hanigan, B.S., Ed.D., *Lecturer in Education*
Joan Higginson Masterson, B.S. in P.E., *Instructor in Physical Education for Women*
Camille Jacob Craig, B.S. in P.E., A.M. in Ed., *Instructor in Physical Education for Women*

Consultants in Research

Wesley Earl Armstrong, M.S., Ed.D., *Chief for Teacher Education, U.S. Office of Education*
John Robert Ludington, Ph.D., *Specialist in Industrial Arts, U.S. Office of Education*
Francis James Brown, Ph.D., *Staff Associate, American Council on Education*

Field Service Coordinators

Alexander Anderson, A.M., *Assistant Principal, Washington-Lee High School, Arlington, Virginia*
Mary Foust Maré, A.M., *Assistant Principal and Dean of Girls, Wakefield Junior-Senior High School, Arlington, Virginia*

Claude Manby Richmond, B.S., A.M. in Ed., *Principal, Stratford Junior High School, Arlington, Virginia*

COMMITTEES*

THE DEAN'S COUNCIL†

1957
Don Carlos Faith
Joseph Henry Krupa

1958
Helen Bennett Lawrence
Kathryn Mildred Towne

1959
Calvin Weir Pettit
Anthony Charles LaBue

COMMITTEE ON GRADUATE STUDIES

The Dean of the School, *Chairman*
Mitchell Dreese
Burnice Herman Jarman
Blake Smith Root
Anthony Charles LaBue
Thelma Hunt
Don Carlos Faith
Ralph Windsor Ruffner
Grover LaMarr Angel

COMMITTEE ON ADMISSION AND ADVANCED STANDING

The Dean of the School, *Chairman*
Ruth Harriet Atwell
Harold Griffith Sutton
Burnice Herman Jarman
Frank Mark Weida
Frances Kirkpatrick
Joseph Henry Krupa

COMMITTEE ON SCHOLARSHIP

Blake Smith Root, *Chairman*
Helen Bennett Lawrence
Kathryn Mildred Towne
Vincent James DeAngelis

GENERAL INFORMATION

INTRODUCTORY

It is the purpose of the School of Education to prepare teachers, supervisors, and administrators for the higher ranges of educational service and to offer opportunities to teachers of experience to extend their education. The School includes the departments of Education, Physical Education, and Home Economics. It offers both graduate and

* The President of the University and the Dean of the School of Education are members ex officio of all committees.
† Elected by the Faculty.

undergraduate work. Other departments of the University provide general education and subject-matter courses needed for a well-balanced program of teacher education.

The schedule of courses is arranged to meet the convenience of both full-time and part-time students. By attending evening, Saturday, and summer classes, teachers in the schools of Washington and vicinity may complete all the requirements for a degree without giving up their positions.

REGULATIONS

Students in the School of Education are subject to, and are expected to familiarize themselves with, the regulations concerning ADMISSION, REGISTRATION, FEES AND FINANCES *stated on pages 12–27, and the University regulations stated on pages 46–54.*

AMOUNT OF WORK

A normal program of work for an undergraduate student is fifteen semester hours. A student with a quality-point index of 3.00 or higher may, with the Dean's permission, take eighteen hours. More than eighteen hours may not be taken except by special permission of the Committee on Scholarship.

For an employed student six or seven semester hours constitute a normal program. A student with a quality-point index of 3.00 or higher for the preceding semester may be permitted by the Dean to take nine or ten hours.

For a graduate student fifteen or sixteen semester hours constitute a normal program. For an employed student six or seven semester hours constitute a normal program. If scholarship is sufficiently high, or the nature of employment unusual, the Dean may permit registration for additional semester hours.

A student carrying a full-time program may not be employed part-time for more than fifteen hours a week without permission of the Dean.

THE BACHELOR'S DEGREES

Upon the satisfactory completion of the undergraduate requirements of the School of Education, the degree of Bachelor of Arts in Education, Bachelor of Science in Home Economics, or Bachelor of Science in Physical Education is conferred.

The program of work of each student must be approved by a Faculty adviser. Since each student's program of work will be defined by his

particular needs, it is important that the student have a clear concept of his major interest in education, and also that he be familiar with the teaching-certificate requirements in the locality in which he expects to teach.

REQUIREMENTS FOR THE DEGREES

To be recommended for a degree a student must satisfy the admission, residence, scholarship, and curriculum requirements.

Residence

Candidates for the Bachelor's degrees must complete satisfactorily at this University a minimum of thirty semester hours, nine of which, with the approval of the adviser, may be in the College of General Studies off-campus courses.

For full details concerning continuous registration, see page 51.

Scholarship

The system of grading and of computing scholarship is described in detail on pages 46 and 47.

In order to graduate, a student must have a quality-point index of at least 2.00.

Probation.—An undergraduate student who fails to maintain a quality-point index of at least 2.00 will be placed on probation. A student remains on probation as long as his quality-point index is below 2.00, or until his probation is removed by the Committee on Scholarship.

Suspension.—An undergraduate student who fails to pass in half or more than half of his work, based on a minimum of sixteen semester hours, will be suspended.

A student who has been suspended for poor scholarship may within ten days appeal his case to the Committee on Scholarship through the Dean. If the case appears to be remediable and the student appears likely to improve in his scholarship thereafter, the Committee may readmit him on probation. A student who has been denied readmission on probation may petition the Committee on Scholarship through the Dean for readmission after the lapse of a calendar year. A student who has been suspended twice will not be readmitted.

Curriculum Requirements

In any of the following curricula at least thirty semester hours must consist of courses numbered above 100.

Bachelor of Arts in Education

Programs leading to the degree of Bachelor of Arts in Education have four main objectives: (1) provision of general educational backgrounds, (2) a functional command of ideas, concepts, knowledges, and skills in one or more teaching fields, (3) a mastery of basic professional information and skills adequate for a beginning teacher, and (4) development of attitudes needed for success in teaching. Since the contents of teaching fields differ in scope and complexity, some programs are longer than others in terms of semester hours. None require less than 130 semester hours of satisfactory work.

The general educational backgrounds needed by prospective teachers are obtained through: (1) pre-college education, (2) college courses, (3) work experience, (4) leadership activities, (5) participation in student campus activities, and (6) utilization of off-campus cultural opportunities.

Normally, 64 semester hours of the total requirement are completed in the Junior College of the University or in an equivalent institution elsewhere. (See "Education", page 68.)

Teaching-field requirements include satisfactory completion of prescribed academic courses in one or more fields, a satisfactory score on the special field examination of the National Teacher Examinations, and satisfactory completion of the prescribed special methods courses. Programs of study are available in the following fields: art, biology, business education, chemistry, elementary education, English, French, geography, German, history, mathematics, physics, social studies, Spanish, and speech.

Those preparing to teach on secondary level are required to complete the prescribed courses in a minor as well as a major field.

Prescribed Courses in the Various Teaching Fields*

ART

	Semester Hours
One two-semester course from the following group.....	6
Art 71–72: Introduction to the Arts in America	
Art 109–10: Nineteenth Century Art in Europe	
Art 141–42: Interior Decoration and House Planning	
Art 161–62: Theory and Criticism	
Two semester courses from the following group.....	6
Art 101: Ancient Art	
Art 102: Medieval Art	
Art 105: Renaissance Art in Italy	
Art 106: Renaissance Art in the North	
Art 143: Primitive Art	
Art 146: Art of the Far East	

*Not required for the minor.

Twenty-four semester hours from the following group	24
Art 45–46: Drawing and Painting	
Art 65–66: Drawing and Painting—Life, Still Life, and Portrait	
Art 67–68: Drawing and Painting—Life and Portrait	
Art 81–82: Sculpture	
Art 125–26: Drawing and Painting— Life, Still Life, and Portrait	
Art 127–28: Drawing and Painting—Life and Portrait	
Art 135–36: Drawing and Painting—Life and Portrait	
Art 165–66: Drawing and Painting—Life and Portrait	
Art 175–76: Drawing and Painting—Life and Portrait	
Art 179–80: Sculpture	
Art 183–84: Commercial Art	
Total	36

BIOLOGY

	Semester Hours
Biology 1–2: Survey in Biology	8
Botany 1: Structure and Functions of the Flowering Plant	3
Home Economics 152: Nutrition	3
Physiology 115: Physiology	8
Zoology 1–2: Introduction to Zoology	12
•Additional courses as approved by the adviser	
Total	35

BUSINESS EDUCATION

	Semester Hours
Accounting 1: Introductory Accounting	3
Economics 1–2: Principles of Economics	6
Secretarial Studies 51: Business Correspondence	3
Additional courses as prescribed in *one* of the following groups:	
Group 1—Secretarial Studies	3
Secretarial Studies 2: Intermediate Typewriting	
Secretarial Studies 12: Intermediate Shorthand and Transcription	3
Secretarial Studies 15: Advanced Shorthand, Typewriting, and Transcription	3
Secretarial Studies 16: Secretarial Shorthand, Typewriting, and Transcription	3
Secretarial Studies 54: Secretarial Practice	3
	6
•Additional courses from the following, as approved by the adviser	
Accounting 2: Introductory Accounting	
Business Administration 101: Business Organization and Combination	
Business Administration 109: Office Management	
Business Administration 141: Principles of Marketing	
Business Administration 151: Retailing	
Business Administration 161: Commercial Law	
Economics 121: Money and Banking	
Statistics 52: Mathematics of Finance	
Total	33

• Not required for the minor

	Semester Hours
Group 2—Bookkeeping, Business Arithmetic, and Business Law	
Accounting 2: Introductory Accounting	3
Business Administration 101: Business Organization and Combination	3
Business Administration 102: Business Management	3
Business Administration 161–62: Commercial Law	6
Statistics 52: Mathematics of Finance	3
*Two of the following courses, as approved by the adviser	6
Accounting 111: Financial Statement Analysis	
Business Administration 121: General Insurance	
Business Administration 131: Business Finance	
Business Administration 138: Investments	
Economics 121: Money and Banking	
Total	36
Group 3—Distributive Education	
Business Administration 141: Principles of Marketing	3
Business Administration 142: Marketing Problems	3
Business Administration 145: Sales Management	3
Business Administration 151: Retailing	3
*Four of the following courses, as approved by the adviser	12
Business Administration 146: Sales Management Problems	
Business Administration 147: Advertising	
Business Administration 150: Principles of Purchasing	
Business Administration 158: Traffic Management	
Business Administration 175: Introduction to Foreign Trade	
Business Administration 176: Exporting and Importing	
Total	36

CHEMISTRY

Chemistry 11–12: General Chemistry	8
Chemistry 21: Qualitative Inorganic Analysis	4
Chemistry 22: Quantitative Inorganic Analysis I	4
Chemistry 151–52: Organic Chemistry	8
Chemistry 191: History of Chemistry	2
*One of the following	8–10
Chemistry 111–12 and 113–14: Physical Chemistry	
Biochemistry 221–22: Biochemistry	
Total	34–36

ELEMENTARY EDUCATION

Education 113: Elementary School Art	3
Education 114: Elementary School Music	3
Education 128: Children's Literature	3
Physical Education 101: Physical Education in Elementary School	3
Science, as approved by adviser	6–14

* Not required for the minor.

History 71–72: Development of the Civilization of the United States	6
Four of the following semester courses, as approved by the adviser...	12
Economics 1–2: Principles of Economics	
Geography 51, 52: Introduction to Geography; World Regions	
History 39–40: Development of European Civilization	
Political Science 9–10: Government of the United States	
Religion 59–60: History of Religion	
Sociology 1–2: Introductory Sociology	
Total	36–44

ENGLISH

English 1, 2: English Composition	6
English 52: Introduction to English Literature	3
English 71–72: Introduction to American Literature	6
English 125: The Evolution of Modern Speech	3
English 135–36: Shakespeare	6
Speech 11: Training the Speaking Voice	3
*Three semesters of the following courses, with the approval of the adviser	9
English 151–52: The Romantic Movement	
English 161–62: Victorian Literature	
English 165–66: The Twentieth Century	
English 171–72: Studies in American Literature	
English 173–74: Major American Poets	
English 176: American Drama	
English 177–78: American Fiction	
English 182: The English Novel	
English 199: Proseminar	
Total	36

FRENCH

French 1–2: First-year French	6
French 3–4: Second-year French	6
French 9–10: French Conversation and Composition	6
French 51–52: Survey of French Literature and Civilization	12
*Additional courses in French, as approved by the adviser	6
Total	36

GEOGRAPHY

Geography 51: Introduction to Geography	3
Geography 52: World Regions	3
Geography 103–4: Cartography	6
Geography 113: Geomorphology	3
Geography 114: Weather and Climate	3
Geography 151: Economic Geography of the United States	3
Geography 152: Political Geography of the United States	6
*Two of the following semester courses	
Geography 183: Northwest Europe	

* Not required for the minor.

Geography 184: The Mediterranean
Geography 191: Middle America
Geography 192: South America
Geography 195: Eastern and Southeastern Asia
Geography 197: The Pacific
Geography 198: Australia

*Two of the following semester courses..... 6
Geography 125: Economic Geography: Trade and Transportation
Geography 126: Economic Geography: Raw Materials
Geography 127: Economic Geography: Manufacture
Geography 128: Economic Geography: Agriculture
Geography 131: Conservation of Natural Resources
Geography 132: Land Use
Geography 141: Geography of Settlement
Geography 142: Urban Geography

Total..... 36

GERMAN

German 1–2: First-year German..... 6
German 3–4: Second-year German..... 6
German 51–52: Introduction to German Literature..... 6
Additional courses in German, as approved by the adviser..... 18

Total..... 36

HISTORY

History 39–40: The Development of European Civilization..... 6
History 71–72: The Development of the Civilization of the United States 6
Six semester hours, as approved by the adviser, from each of the following groups 18
Group 1—American History
History 171–72: Social History of the United States
History 173: Representative Americans
History 174: Economic History of the United States
History 181–82: Diplomatic History of the United States
Group 2—European History
History 109: Thought and Culture of the Western World I: Ancient Civilization
History 110: Thought and Culture of the Western World II: The Middle Ages and the Renaissance
History 130: Nationalism
History 145–46: Russian History
History 147: Economic History of Europe
History 149–50: European Diplomatic History
History 151–52: English History
*Group 3—Latin American History
History 163: Latin American History: Colonial Period
History 164: South America since Independence
History 166: Mexico and the Caribbean since Independence

* Not required for the minor.

Political Science 177: Recent Trends in Latin American Politics and Government	
Political Science 178: International Politics in the Western Hemisphere	
*Additional semester hours, as approved by the adviser, from one of the foregoing groups	6
Total	36

MATHEMATICS

Mathematics 3: College Algebra	3
Mathematics 6: Plane Trigonometry	3
Mathematics 12: Analytic Geometry	3
Mathematics 19: Differential Calculus	3
Mathematics 20: Integral Calculus	3
*Mathematics 123: Theory of Equations, or	
*Mathematics 125: Advanced Algebra	3
*Mathematics 132: Differential Equations, or	
*Mathematics 139: Advanced Calculus	3
*An additional course in Mathematics, as approved by the adviser	3
Statistics 52: Mathematics of Finance	3
Total	27

PHYSICS

Physics 5, 6, 7, and 8: General Physics	12
Physics 55: Physical Measurements	3
Physics 101: Mechanics	3
Physics 105: Principles of Electricity	3
Physics 106: Optics	3
*Chemistry Elective—Chemistry 11–12: General Chemistry or Chemistry 12–21: General Chemistry and Qualitative Inorganic Analysis	8
Mathematics 12: Analytic Geometry	3
Mathematics 19: Differential Calculus	3
Mathematics 20: Integral Calculus	3
*Six semester hours to be selected from the following	6
Physics 102: Heat and Thermodynamics	
Physics 113: Atomic Physics	
Physics 114: Statistical Physics	
Physics 128: Sound	
Physics 132: Electronics	
Physics 155–56: Advanced Physical Measurements	
Total	47

SOCIAL STUDIES

History 39–40: The Development of European Civilization	6
History 71–72: The Development of the Civilization of the United States	6

*Not required for the minor.

Political Science 9–10: Government of the United States	6
Two of the following courses	12
Economics 1–2: Principles of Economics	
Geography 51, 52: Introduction to Geography and World Regions	
Religion 59–60: History of Religions	
Sociology 1–2: Introductory Sociology	
*Additional second-group courses, as approved by the adviser, from one of the following fields; Economics, Geography, History, Political Science, Religion, Sociology	12
Total	42

SPANISH

Spanish 1–2: First-year Spanish	6
Spanish 3–4: Second-year Spanish	6
Spanish 9–10: Spanish Conversation and Composition	6
*Additional courses as approved by the adviser	18
Total	36

SPEECH

Speech 1: Effective Speaking	3
Speech 2: Persuasive Speaking	3
Speech 11: Training the Speaking Voice	3
Speech 32: Oral Reading	3
Speech 101: Voice and Phonetics	3
Speech 121: Group Discussion and Conference Leadership	3
Speech 153: Acting	3
Speech 175: Speech Correction	3
One of the following areas of specialization, as approved by the adviser:	
*Group 1—Speech Arts	
Twelve semester hours to be chosen from the following	12
Speech 102: Oral Interpretation of Literature	
Speech 126: Public Discussion and Debate	
Speech 154: Play Production	
Speech 166: History of the Theater	
Speech 169: Creative Dramatics and Children's Theater	
*Group 2—Speech Correction	
Twelve semester hours to be chosen from the following	12
Speech 176: Speech Correction	
Speech 177–78: Clinical Practice in Speech Therapy	
Speech 182: Introduction to Hearing Problems	
Speech 183–84: Clinical Practice in Hearing Therapy	
Additional courses in English, Physiology, Psychology, or Speech, as approved by the adviser	
Total	36

* Not required for the minor.

Professional Education

The basic professional information, skills, and attitudes needed by beginning teachers are provided through a sequence of courses to be taken in the junior and senior years. Lectures and class discussions are closely coordinated with field work. Instruction is differentiated to meet the needs of those preparing to teach on the various levels—elementary school, junior high school, senior high school, and adult.

Professional Courses—Secondary

Education 109–10: Learning and Teaching	6
Education 121–22: Society and the School	6
•Education 131: Common Teaching Skills	3
Education 133–34: Observation and Student Teaching	6–9
•Education 136 to 150: Special Methods	3–6
Total	24–30

Professional Courses—Elementary

Education 109–10: Learning and Teaching	6
Education 121–22: Society and the School	6
Education 111: Methods in Elementary Education	6
Education 133–34: Observation and Student Teaching	6–9
Total	24–27

Bachelor of Science in Home Economics

The curriculum leading to this degree is designed to prepare young women for the important responsibility of home-making. The program can be adapted, however, to meet special requirements in nutrition, dietetics, clothing, and other related fields. Each student must plan her work with the assistance of a faculty adviser in the Department of Home Economics.

GENERAL HOME-MAKING

JUNIOR YEAR	Semester Hours
Home Economics 53	3
Home Economics 72	3
Home Economics 102	3
Home Economics 123	3
Physiology 115	3
Electives	15
Total	30

SENIOR YEAR	Semester Hours
Home Economics 152	3
Home Economics 171	3
Home Economics 181	3
Home Economics 192	6
Home Economics 197–98	12
Electives	3
Total	30

• Not required for the minor.

Bachelor of Science in Physical Education for Men

There are three curricula leading to this degree. The Single-Major and Subject-Certification Teacher's Curriculum is designed to prepare students for teaching positions in smaller schools where it is necessary to teach an academic subject in addition to physical education. The Single-Major Teacher's Curriculum prepares for the teaching of physical education in the larger schools. The Physical Education and Recreation Curriculum has been planned for those who wish to be prepared to direct programs of recreation in addition to the teaching of physical education.

The minimum requirements for this degree are sixty-six semester hours, distributed as follows:

SINGLE-MAJOR AND SUBJECT-CERTIFICATION TEACHER'S CURRICULUM

The minimum requirements for this degree are twenty-one semester hours in education, twenty-four hours in physical education, eighteen hours in an academic teaching field, and three hours in physiology, distributed as follows:

JUNIOR YEAR	Semester Hours
Education 109–10	6
Education 121–22	6
Physical Education 103	3
Physical Education 105	3
Physical Education 107	1
Physical Education 113–14	4
Physiology 115	3
Academic teaching field	7
Total	33

SENIOR YEAR	Semester Hours
Education 131	3
Education 133–34	6
Physical Education 115–16	4
Physical Education 122	3
Physical Education 131	3
Physical Education 138	3
Academic teaching field	11
Total	33

SINGLE-MAJOR TEACHER'S CURRICULUM

The minimum requirements for this degree are twenty-one semester hours in education, twenty-eight semester hours in physical education, three hours in physiology, and fourteen hours of electives:

JUNIOR YEAR	Semester Hours
Education 109–10	6
Education 121–22	6
Physical Education 103	3
Physical Education 107	1
Physical Education 109–10	4
Physical Education 113–14	4
Physical Education 115–16	4
Physiology 115	3
Electives	2
Total	33

SENIOR YEAR	Semester Hours
Education 131	3
Education 133–34	6
Physical Education 105	3
Physical Education 122	3
Physical Education 131	3
Physical Education 138	3
Electives	12
Total	33

PHYSICAL EDUCATION AND RECREATION CURRICULUM

The minimum requirements for this course are sixty-six semester hours, distributed as follows:

JUNIOR YEAR	Semester Hours
Education 109	3
Education 121–22	6
Physical Education 48	2
Physical Education 107	1
Physical Education 109–10	4
Physical Education 113–14	4
Physical Education 132	1
Physical Education 151–52	6
Electives	6
Total	33

SENIOR YEAR	Semester Hours
Education 131	3
Education 133–34	6
Physical Education 103	1
Physical Education 122	3
Physical Education 131	3
Physical Education 138	3
Physical Education 161	3
Physical Education 162	3
Electives	6
Total	33

Bachelor of Science in Physical Education for Women

There are three curricula leading to this degree. The Dual-Major Teacher's Curriculum is designed to prepare students for teaching positions in smaller schools where it is necessary to teach an academic subject in addition to physical education. The Single-Major Teacher's Curriculum prepares for the teaching of physical education in the larger schools. Within this course there is opportunity for specialization in dance, sports, or correctives. The Physical Education and Recreation Curriculum has been planned for those who wish to be prepared to direct programs of recreation in addition to the teaching of physical education.

The minimum requirements for this degree are sixty-six semester hours distributed as follows:

DUAL- OR SINGLE-MAJOR TEACHER'S CURRICULUM

The student desiring to prepare herself to teach another subject in addition to Physical Education for Women may do so by choosing her elective hours from one subject-matter field with the advice of the Dean of the School of Education. Relevant work completed in the Junior College may be counted in this subject-matter field.

JUNIOR YEAR	Semester Hours
Education 109–10	6
Physical Education 58	2
Physical Education 101	3
Physical Education 103	3
Physical Education 105–6	6
Physical Education 107	1
Physical Education 111–12	2
Physical Education 117	1
Physical Education 118	1
Physical Education 132	1
Physiology 115	3
Electives	3
Total	32

SENIOR YEAR	Semester Hours
Education 121–22	6
Education 133–34	6
Physical Education 113–14	4
Physical Education 121	3
Physical Education 122	3
Physical Education 131	3
Physical Education 138	3
Electives	6
Total	34

PHYSICAL EDUCATION AND RECREATION CURRICULUM

JUNIOR YEAR	Semester Hours
Physical Education 48	2
Physical Education 58	2
Physical Education 101	3
Physical Education 105–6	6
Physical Education 107	1
Physical Education 109–10	4
Physical Education 111–12	2
Physical Education 117	1
Physical Education 118	1
Physical Education 151–52	6
Physiology 115	3
Electives	3
Total	34

SENIOR YEAR	Semester Hours
Education 121–22	6
Education 133–34	6
Physical Education 103	3
Physical Education 113–14	4
Physical Education 122	3
Physical Education 132	1
Physical Education 138	3
Physical Education 161	3
Physical Education 162	3
Total	32

THE DEGREE OF MASTER OF ARTS IN EDUCATION

Upon the satisfactory completion of the graduate requirements of the School of Education, the degree of Master of Arts in Education is conferred. This is a professional degree, designed to prepare the student for some particular type of educational service. The program of studies leading to the degree is selected by the candidate and his adviser from the various related departments of the University to give the student an adequate background in his chosen vocational field. For the prospective high school or junior high school teacher this will ordinarily include study in the subject which he is planning to teach as well as in the field of education.

In accordance with the foregoing general pattern of work, graduate programs of study are available in the following fields: (*1*) school administration—secondary school principalship or elementary school prin-

cipalship; (2) adult education; (3) secondary education—senior or junior high school; (4) elementary education—intermediate grade or early childhood education; (5) curriculum; (6) employee training; (7) guidance; (8) reading. Programs of work for teachers-in-service are differentiated from those for students without teaching experience. Additional information concerning these programs may be obtained by writing to the Dean.

Admission to Candidacy

The requirements for admission to candidacy for the Master's degree are stated on pages 19–20. Those desiring to prepare for positions in guidance or administration must have had at least two years of successful teaching experience. Candidates who have had no professional courses must satisfactorily complete the required undergraduate professional courses, including Observation and Student Teaching, in addition to graduate course requirements.

Advanced Standing

Graduate work completed in other accredited institutions of learning may be credited toward the Master's degree, but a minimum of thirty semester hours must be completed at The George Washington University as a matriculated candidate for the degree in the School of Education.

Advanced courses completed in excess of the requirements for the Bachelor's degree in this University may be credited toward the Master's degree to the extent of twelve semester hours, provided the work fits in with the student's plan of specialization and is approved in writing by the Dean before being undertaken.

In determining advanced standing at the time of admission or readmission to Master's candidacy at this University, graduate work completed more than three years previously is not counted.

REQUIREMENTS FOR THE DEGREE

Plans of Study

Two plans of study lead to the degree of Master of Arts. *Plan 1* requires a minimum of thirty hours of graduate credit, including a thesis carrying six hours of graduate credit. *Plan 2* requires a minimum of thirty-three hours of graduate credit, including the course in *Educational Research Methods and Procedures* carrying three hours of graduate credit.

Selection of Courses

Programs of study under *Plan 1* must include a minimum of twelve semester hours from third-group courses in addition to the thesis. Under *Plan 2* a minimum of eighteen semester hours, in addition to the course in *Educational Research Methods and Procedures*, must be from third-group courses.

Programs of study must include a minimum of twelve semester hours selected from courses offered in the Department of Education.

When programs of study include additional academic preparation in one or more teaching fields, undergraduate and graduate courses combined must be at least equivalent to the undergraduate requirements of the Bachelor of Arts degree in the teaching field concerned.

Residence

Candidates for the degree of Master of Arts in Education must complete satisfactorily at this University a minimum of thirty semester hours, nine of which, with the approval of the adviser, may be in the College of General Studies off-campus courses.

The Thesis

The thesis required under *Plan 1*, must conform to standards prescribed. A statement of these standards may be obtained at the Office of the Dean.

The thesis subject must be approved in writing by the candidate's adviser and recorded in the Office of the Registrar by the date announced in the University calendar. One typewritten original and two legible and complete carbon copies of the thesis in its final form (on official thesis paper) must be presented to the Dean by the candidate not later than the date announced in the University calendar. Requirements regarding the form of the thesis are stated on pages 51–52, and additional information will be supplied by the Dean.

Payment of tuition for the thesis will entitle the candidate, during the academic year of registration, to the advice and direction of the member of the Faculty under whom the thesis is to be written. In case a thesis is unfinished, an additional successive academic year may be granted without further tuition payment. If the preparation of the thesis extends beyond the two-year period it must be registered for again and tuition paid on the same basis as for a repeated course.

Comprehensive Examination

In addition to the course examinations, the candidate must pass a professional comprehensive examination in two parts: (1) a general exam-

ination concerned with an integrated understanding of the major areas in professional education, and (2) a special examination concerned with the candidate's area of specialization.

The general part of the comprehensive examination is divided into three groups as follows: Group I (Foundations) covers learning and teaching, society and the school, child growth and development, adolescent growth and development, history of education, philosophy of education, and educational research; Group II (Major Levels) covers elementary education, secondary education, adult education, employee training, and vocational education; Group III (Common Elements) covers administration, curriculum, evaluation, guidance, methodology, and reading.

The candidate must be prepared to answer two questions in each group, none of which shall be concerned with his area of specalization.

Five-Year Program

A candidate entering the School of Education from the Junior College (or with equivalent preparation) may choose a three-year program leading to the degrees of Bachelor of Arts and Master of Arts in Education to be conferred simultaneously. The first year of this combined program will be devoted to teaching-field preparation; the work of the second year will include the Bachelor of Arts junior-year professional courses and a maximum of eighteen semester hours of graduate courses; that of the third and final year, senior-year undergraduate professional courses and the remaining graduate courses needed for the Master's degree. Observation and Student Teaching to be elected in the third year may not be taken for graduate credit. A quality-point index of at least 2.50 must be attained before beginning the work of the senior year and the program must meet all the requirements for the degrees of Bachelor of Arts and the Master of Arts in Education.

THE ADVANCED PROFESSIONAL CERTIFICATE

Upon the satisfactory completion of the program of advanced graduate studies of the School of Education, the Advanced Professional Certificate is granted. This program is designed to prepare teachers and administrators for more effective service in their chosen fields and to enable them to qualify for a higher step in the local salary scale.

The program of studies leading to the certificate is selected by the candidate and his adviser from the various related departments of the University in accordance with his needs. In general it includes thirty hours of graduate credit beyond the Master's degree. The candidate wishing to increase his teaching proficiency may include additional study

in his teaching field. For information concerning available programs, see the separate catalogue of the School of Education.

Admission to Candidacy

The requirements for admission to candidacy for the Advanced Professional Certificate are stated on page 20. The applicant who is unable to meet the admission requirements may be admitted with deficiencies to be met by satisfactorily completing prerequisites in addition to the specified program of graduate study. Each applicant must be interviewed by a member of the Faculty of the School of Education. The applicant seeking to qualify for a higher level in the local salary scale must have his program approved by the appropriate representative of the school system employing him.

Transfer of Credit

Appropriate graduate work completed in other accredited higher institutions may be credited toward the requirements for the Certificate, but a minimum of eighteen semester hours must be completed at The George Washington University as a matriculated candidate in the School of Education. The candidate is encouraged to include in his program study at other accredited higher institutions when such study seems to be in his best interest. In determining advanced standing at the time of admission or readmission to Certificate candidacy, graduate work completed more than three years previously is not counted.

Requirements for the Certificate

Plans of Study

In planning his program of studies the candidate should give first consideration to his particular needs. If he is a teacher and his graduate study leading to the Master's degree was largely in professional education, he may find it desirable to emphasize additional mastery of his teaching field. If his Master's preparation was in a content field, he may wish to devote a major part of his program to additional professional study. Those in administration and related services may wish to continue specialization on a more advanced level.

The program of study must include, in addition to any prerequisites, a minimum of thirty hours of graduate credit in third-group courses and not less than twelve semester hours in courses offered by the School of Education.

Residence

Candidates for the Advanced Professional Certificate must complete satisfactorily at this University a minimum of eighteen semester hours in courses offered on the campus. The balance of the program may be in the College of General Studies off-campus courses or in other approved institutions of higher learning. The candidate is not required to pursue his program of study continuously. On request a leave of absence is granted to the candidate for a period not to exceed three years.

THE DEGREE OF DOCTOR OF EDUCATION

The requirements for the degree of Doctor of Education cannot be stated in semester hours, but they consist in general of at least two full years of work beyond the degree of Master of Arts in Education or the equivalent. The programs of study are designed to prepare students for administrative or supervisory positions, the teaching of education in normal schools or colleges, the teaching of an academic subject in schools or colleges, or for specialized types of educational service. The work is given a practical rather than a theoretical bent, and emphasizes the mastery and application of subject matter, both in the study requirements and in the dissertation. Special emphasis is placed upon the professional success of the candidate.

The candidate's program of study largely depends upon his previous educational background and his professional objective. Opportunities are provided for study leading to the following professional objectives: school superintendent, secondary school principal, elementary school principal, supervisor, director of guidance, director of curriculum development, professor of education, and specialist in educational research.

Qualifications of the Applicant

The candidate for the degree of Doctor of Education must have completed (1) graduate work in fields prerequisite to his objective, equivalent to that required for the degree of Master of Arts in Education in The George Washington University, and (2) at least three years of successful educational experience.

Admission to Candidacy

To be admitted to candidacy for the degree the applicant must be accepted by the Committee on Graduate Studies on the basis of an examination which will usually include the following: (1) a written examination involving problems related to the applicant's background; (2) a scholastic-aptitude test; (3) an oral examination.

Consultative Committee

If the applicant is accepted as a candidate, his consultative committee will counsel the candidate and guide his work.

The consultative committee, in cooperation with the candidate, will (1) determine the candidate's fields of study, in each of which the candidate must pass a written examination at least eight months before he presents himself for the degree; (2) formulate a list of course requirements and of readings that will assist him in preparing for the examinations; and (3) designate the tools of investigation that will be needed by the candidate in the prosecution of his study. These tools may include one or more foreign languages, statistical methods, historical criticism, or any others considered essential by the committee. An examination in the tools designated must be passed by the candidate before he takes his comprehensive examination.

The Dissertation

When the candidate has satisfied the requirements of his consultative committee, the committee is dissolved. A member of the Faculty, in whose field the topic of the dissertation falls, is then appointed to serve as the candidate's adviser on his dissertation and in his field of specialization, and to recommend him to the Dean for the final oral examination when, in his judgment, the candidate's dissertation is acceptable.

Not later than the date specified in the University calendar the candidate shall submit to the Dean of the School of Education three copies of his dissertation—one typewritten original and two legible and complete carbon copies, on official thesis paper—and also a typewritten summary of the dissertation consisting of not to exceed 3,500 words. Requirements regarding the form of the dissertation are stated on pages 51–52, and additional information will be supplied by the Dean.

The successful candidate is required, before receiving his degree, to pay a fee to cover the expense of printing the summary of his dissertation.

The Final Examination

At least three weeks before the degree is to be conferred the candidate must pass an oral examination on his dissertation and on his field of specialization before a committee of the Faculty appointed by the Dean, supplemented by two experts from outside the University appointed by the President. This examination is open to the public and all are privileged to question the candidate. The Dean, or a member of the Faculty designated by him, will preside at this examination.

THE SCHOOL OF GOVERNMENT

THE FACULTY AND STAFF OF INSTRUCTION*

Arthur Edward Burns, Ph.D., *Dean of the School of Government*
Joe Lee Jessup, M.B.A., *Assistant Dean in the School of Government*

Richard Norman Owens, Ph.D., C.P.A., *Professor of Business Administration*
Elmer Louis Kayser, Ph.D., LL.D., *Professor of European History*
Warren Reed West, Ph.D., *Professor of Political Science*
Frank Mark Weida, Ph.D., *Professor of Statistics*
Harold Griffith Sutton, M.S., *Professor of Finance*
Mitchell Dreese, Ph.D., *Professor of Educational Psychology*
Ralph Dale Kennedy, Ph.D., *Professor of Accounting*
Wood Gray, Ph.D., *Professor of American History*
†Thelma Hunt, Ph.D., M.D., *Professor of Psychology*
Arthur Edward Burns, Ph.D., *Professor of Economics*
John Withrow Brewer, Ph.D., *Professor of International Law*
Harold Loran Geisert, Ph.D., *Professor of Sociology*
Howard Maxwell Merriman, Ph.D., *Professor of American Diplomatic History*
Alan Thomas Deibert, A.M., *Professor of Romance Languages*
Donald Stevenson Watson, Ph.D., *Professor of Economics*
Myron Law Koenig, Ph.D., *Professor of American History*
Arlin Rex Johnson, Ph.D., *Professor of Business Administration*
Everett Herschel Johnson, Ph.D., *Professor of Statistics*
Joe Lee Jessup, M.B.A., *Professor of Business Administration*
Robert Dale Campbell, Ph.D., *Professor of Geography*
†Roderic Hollett Davison, Ph.D., *Professor of European History*
Wolfgang Herbert Kraus, Dr.Jur., S.J.D., *Professor of Political Science*
James Carlton Dockeray, Ph.D., *Professor of Finance*
Thomas Willard Holland, Ph.D., LL.D., *Visiting Professor of Labor Economics*
Henry Furness Hubbard, Ph.D., *Professorial Lecturer in Psychology*
Gerhard Colm, Dr. rer. pol., *Professorial Lecturer in Economics*
Orton Wells Boyd, A.M., C.P.A., *Professorial Lecturer in Accounting*
Montell Ernest Ogdon, Ph.D., *Professorial Lecturer in Business Administration*

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* The President of the University, the Dean of Faculties, the Dean of the School, the Registrar of the University, the Director of Admissions of the University, Professors, Adjunct Professors, Associate Professors, and Assistant Professors constitute the Faculty.

† On sabbatical leave fall semester 1956–57.

Ralph Aubrey Young, M.B.A., Ph.D., *Professorial Lecturer in Economics*

Karl Ernest Stromsem, Ph.D., *Professorial Lecturer in Public Administration*

Joseph Leo Kreiger, M.B.A., *Professorial Lecturer in Business Administration*

Edwin Lewis, M.B.A., *Professorial Lecturer in Accounting*

Carl William Clewlow, A.M., *Professorial Lecturer in Business Administration*

Eugene Fields, B.S., C.P.C.U., *Professorial Lecturer on Insurance*

Fred Latimer Hadsel, Ph.D., *Professorial Lecturer in Political Science*

Clarence McLaughlin, B.S., LL.B., *Professorial Lecturer in Accounting*

Frank Higginbotham, M.S., C.P.A., *Professorial Lecturer in Accounting*

Forest Carlyle Brimacombe, M.B.A., *Professorial Lecturer in Accounting*

Ira Ernest Steele, A.M., *Professorial Lecturer in Accounting*

James Leonard Buckler, A.M., *Professorial Lecturer in Accounting*

Fred Vincent Demaret, M.S., *Professorial Lecturer in Accounting*

Harold Jerome Bobys, A.B., C.P.A., *Professorial Lecturer in Accounting*

William George Torpey, Ph.D., *Professorial Lecturer in Public Administration*

Reuben Horchow, M.B.A., LL.B., *Professorial Lecturer in Business Administration*

Joseph Novak Stonesifer, A.M., *Professorial Lecturer in Business Administration*

Solomon Kullback, Ph.D., *Professorial Lecturer in Statistics*

Edward Campion Acheson, Ph.D., *Associate Professor of Finance*

Antonio Alonso, A.M., *Associate Professor of Spanish*

Wolfram Karl Legner, Ph.D., *Associate Professor of German*

Carr Bartleson Lavell, A.M., *Associate Professor of Sociology*

Don Carlos Faith, Ph.D., *Associate Professor of Educational Psychology*

James Norman Mosél, A.M., *Associate Professor of Psychology*

Rafael Supervía, Doctor en Derecho, *Associate Professor of Spanish*

Gordon Gouverneur Barnewall, Ph.D., *Associate Professor of Business Administration*

William Columbus Davis, Ph.D., *Associate Professor of Latin American History*

David Springer Brown, Ph.D., *Associate Professor of Public Administration*

Ronald Bettes Thompson, Ph.D., *Associate Professor of European History*

Frederick Charles Kurtz, M.B.A., C.P.A., *Associate Professor of Accounting*

Richard Catlin Haskett, Ph.D., *Assistant Professor of American History*
Howard Rowland Ludden, A.M., *Assistant Professor of Political Science*
Walter David Fackler, A.B., *Assistant Professor of Economics*
Helen Zhemchuzhnaya Yakobson, B.S., *Assistant Professor of Russian*
Wilson Emerson Schmidt, Ph.D., *Assistant Professor of Economics*
John William Skinner, Ph.D., *Assistant Professor of Economics*
Harland Walter Westermann, A.M., *Assistant Professor of Geography*
Hugh Linus LeBlanc, A.M., *Assistant Professor of Political Science*
Wilbur Earle Benson, M.B.A., *Assistant Professor of Accounting*
Chester Hayden McCall, Jr., A.M., *Assistant Professor of Statistics*
Joseph Patrick Murphy, A.B., LL.B., LL.M., *Lecturer on Commercial Law*
Roy Brandon Eastin, Ph.D., *Lecturer in Public Administration*
Eric Theodore Hagberg, A.M., *Lecturer in Public Administration*
Irving Samuel Schwartz, A.M., *Lecturer in Public Administration*
Frederick Timberlake, M.B.A., *Instructor in Business Administration*

COMMITTEES*

The Dean's Council†

1957
Gordon Gouverneur Barnewall
Richard Catlin Haskett

1958
David Springer Brown
Howard Rowland Ludden

1959
Frederick Charles Kurtz
Frederick Timberlake

Committee on Admission and Advanced Standing

John Withrow Brewer, *Chairman*
Frank Mark Weida
Howard Maxwell Merriman

Committee on Curriculum and Programs

Ralph Dale Kennedy, *Chairman*
John Withrow Brewer
Arlin Rex Johnson
James Carlton Dockeray
Donald Stevenson Watson
Everett Herschel Johnson
David Springer Brown

* The President of the University and the Dean of the School of Government are members ex officio of all committees.
† Elected by the Faculty.

COMMITTEE ON DOCTORAL STUDIES

Ralph Dale Kennedy, *Chairman*

Richard Norman Owens — Everett Herschel Johnson
Donald Stevenson Watson — James Carlton Dockeray

EXECUTIVE COMMITTEE, BUREAU OF BUSINESS AND ECONOMIC RESEARCH

James Carlton Dockeray, *Chairman*

Richard Norman Owens — Ralph Dale Kennedy
Donald Stevenson Watson — Everett Herschel Johnson

GENERAL INFORMATION

INTRODUCTORY

The George Washington University has provided training in both foreign service and governmental theory and administration throughout its history. This was one of its purposes when chartered in 1821. The School of Government was established in 1928 to bring together in various undergraduate and graduate curricula the work offered in foreign service and much of the other academic work in the theory and administration of government.

It is the purpose of the School to give the student an understanding of his responsibilities under the Constitution of the United States in the conduct of public office, domestic and foreign, and to prepare students for careers not only in governmental service but also in related business and professional fields. This can be accomplished not through any single course but through curricula which correlate social, economic, political, historical, business, and psychological studies.

The program embraces both graduate and undergraduate work. Curricula, leading to the degree of Bachelor of Arts in Government are offered in Foreign Affairs, Accounting, Business Administration, and Business and Economic Statistics. Graduate work leading to a Master's degree is available in each of these fields and in Economic Policy, Public Administration, Personnel Administration, Counseling, and Psychometrics. Graduate study leading to the degree of Doctor of Business Administration is also available (see pages 198–99).

The Foreign Affairs program is broad, covering international political relations, international trade and finance, international communications, and regional studies. Its purpose is to equip students, by providing general background and specialized work, for careers in the field of American foreign relations. The diplomatic service of the United States, the

several agencies of government with responsibilities in the international field, the international organizations, and American enterprise abroad offer opportunities in this field.

Governmental service requires special training and background in many other subjects, including economic research, statistical investigation, accounting, administrative management, and personnel administration. The academic background for such work is offered in the various curricula of the School and is described below.

REGULATIONS

Students in the School of Government are subject to, and are expected to familiarize themselves with, the regulations concerning ADMISSION, REGISTRATION, FEES AND FINANCES ***stated on pages 12–27, and the University regulations stated on pages 46–54.***

AMOUNT OF WORK

A full-time student not on probation may take ordinarily not more than seventeen semester hours. A student employed more than twenty-four hours a week, who is not on probation, may take not more than ten semester hours.

A full-time undergraduate student whose quality-point index is 3.50 or higher may take not more than nineteen semester hours. An undergraduate student employed more than twenty-four hours a week, whose quality-point index is 3.50 or higher, may take up to twelve semester hours.

Exception to these rules will require the approval of the Dean.

ATTENDANCE

The student is held responsible for all the work of the courses in which he is registered, and all absences must be excused by the instructor in charge before provision is made for him to make up the work missed.

CLASSIFICATION OF STUDENTS

A student who holds an Associate in Arts degree from the Junior College or the equivalent from another accredited institution, and who has registered his choice of one of the prescribed curricula at the Office of the Registrar, is classed as a *junior*. A student who has completed thirty semester hours in the School of Government is classed as a *senior*. A student who has satisfactorily completed the work for a Bachelor's degree and who has registered his choice of one of the prescribed fields of study at the Office of the Registrar, is classed as a *master in course*.

Independent Study Plan

Under the independent study plan a student of demonstrated capacity, with special interest in the subject matter of a course, may be permitted to undertake independent study under the personal direction of an instructor, in accordance with the rules of the division in which the subject falls. Credit under this plan is limited to the specific course credits as designated in the list of courses of instruction in this Catalogue.

THE DEGREE OF BACHELOR OF ARTS IN GOVERNMENT

Upon the satisfactory completion of the undergraduate requirements of the School of Government, the degree of Bachelor of Arts in Government, with a designation of the major field of study, is conferred. The major fields are Foreign Affairs, Accounting, Business Administration, and Business and Economic Statistics.

Students who have a special need for integrating courses from several departments or from more than one major field may request approval, by a faculty committee, of a special major program. The same rules and regulations will apply as in the regularly offered majors.

Requirements for the undergraduate major in Economics and Public Administration are stated under the departments of Economics and Political Science, respectively, and are administered by Columbian College.

REQUIREMENTS FOR THE DEGREE

Scholarship

The system of grading and of computing scholarship is described in detail on pages 46 and 47.

In order to graduate, a student must have the following: (1) a quality-point index in all of his work of at least 2.00 and (2) a quality-point index of at least 2.50 in his major. The major includes the required courses and courses taken in the group options.

Probation.—A student must maintain a quality-point index of at least 2.00, or be placed on probation, where he will remain as long as his quality-point index is below 2.00.

Suspension.—A student who has a quality-point index below 1.50 or who is placed on probation for a third semester, whether successive or after an interval, will be suspended.

A student suspended for poor scholarship may apply for readmission after an interval of one calendar year. He must then submit evidence to the Committee on Admission and Advanced Standing that during his absence from the University he has so conducted himself as to indicate

that he will profit by readmission. A student suspended twice for poor scholarship will not be readmitted.

A student with a limited schedule is affected by the foregoing scholarship rules only when he has undertaken fifteen semester hours.

Residence

For residence requirements, see the University regulations on pages 50 and 51.

Curriculum Requirements

To be recommended by the Faculty for graduation, candidates in the School of Government are required to complete, in addition to the appropriate Junior College work (see curricula on pages 70 and 71), a minimum of sixty semester hours during the junior and senior college years, as set forth in one of the following curricula:

Foreign Affairs

		Semester Hours
Econ. 181–82	International Economics	6
Hist. 150	European Diplomatic History Since 1871	3
or Pol. Sc. 171	International Politics	6
Hist. 181–82	Diplomatic History of the United States	3
Pol. Sc. 172	International Organization: The United Nations	6
Pol. Sc. 181–82	International Law	6
Foreign Language	Composition and Conversation	3
Geography		18
Group Option	(To be selected from one of the following groups)	9
Electives	(To be selected in consultation with adviser)	60
	Total	

All foreign affairs majors must complete the *required* courses listed above. The group option provides specialization in international politics, international economics, international communications, or a geographic region (e.g., the Soviet Orbit), depending upon the student's interest. Normally no more than six semester hours may be taken in an option other than the one selected. Consent of the adviser must be obtained for such modification of the option selected.

Group I—International Politics

This group option (18 semester hours as noted in list above) is composed of courses in the departments of Political Science, History, and Geography which are related to the study of American diplomatic relations. The selection of courses must be made in consultation with the adviser.

Group II—International Economic Relations

This group option (18 semester hours as noted in list above) is composed of courses offered primarily by the departments of Economics and Business and Public Administration which are related to the study of American economic, financial, and business relationships with foreign countries. The selection of courses must be made in consultation with the adviser.

Group III—International Communications

This group option (18 semester hours as noted in list above) is composed of courses offered primarily by the departments of Political Science, Psychology, Sociology, and Journalism which are related to the study of international information programs, public opinion, psychological warfare, cultural relations, and public relations. (It is recommended that the student include statistics in his Junior College program.) The selection of courses must be made in consultation with the adviser.

Group IV—Area or Regional Studies

This group option (18 semester hours as noted in the list above) may be selected from courses offered in the departments of Economics, History, Political Science, and Geography. Integrated programs of study are available in the following regions or areas: Europe and the Middle East, Asia and the Pacific Area, the Soviet Orbit, and Latin America. Modifications and combinations of these areas may be made if approved by the adviser, who must also approve the individual courses selected for the option. The foreign language, noted in list above, should be one that is suitable for study of the region or area selected.

Business Administration

		Semester Hours
Bus. Adm. 101	Business Organization and Combination	3
Bus. Adm. 102	Business Management	3
Bus. Adm. 105	Personnel Management in Industry	3
Bus. Adm. 131	Business Finance	3
Bus. Adm. 141	Principles of Marketing	3
Bus. Adm. 161–62	Commercial Law	6
Bus. Adm. 198	Problems in Business Management	3
Acct. 193	Business Budgeting	3
Econ. 121	Money and Banking	3
		30
Group Option (to be selected from one of the following groups)		15
Electives (to be selected in consultation with the adviser)		15
	Total	60

All Business Administration majors must complete the *required* courses listed above. The group options shown below provide specialization in several aspects of business. Selection of the option and the courses (15 semester hours) to be taken in it must be made in consultation with the adviser. Normally no more than 6 semester hours may be taken in an option other than the one selected. Consent of the adviser must be obtained if the student wishes such modification of his option group.

Group I—General Business

This group option is made up of selected courses offered by the departments of Accounting, Business and Public Administration, Economics, and Statistics.

Group II—Personnel Management

This group option is made up of selected courses offered by the departments of Business and Public Administration, Economics, Psychology, Speech, and Statistics.

Group III—Finance

This group option is made up of selected courses offered by the departments of Accounting, Business and Public Administration, Economics, Political Science, and Statistics.

Group IV—Marketing
This group option is made up of selected courses offered by the departments of Business and Public Administration, Economics, Geography, and Statistics.

Group V—Controllership
This group option is made up of selected courses offered by the departments of Accounting, Business and Public Administration, and Economics.

Group VI—Economics
This group option is made up of selected courses offered by the departments of Economics and Business and Public Administration.

Group VII—Statistics
This group option is made up of selected courses offered by the Department of Statistics.

Foreign Commerce.—Business Administration majors who wish to specialize in foreign commerce may request a modification of the above requirements. The modified major excludes some of the above required courses and adds others, such as a third year of foreign language, foreign markets, exporting and importing, economic geography, and other courses relating to overseas trade. Each program must be approved by the adviser.

Accounting

		Semester Hours
Acct. 101	Cost Accounting	3
Acct. 111	Financial Statement Analysis	3
Acct. 121–22	Intermediate Accounting	6
Acct. 132	Accounting Theory	3
Acct. 171	Auditing	3
Acct. 181	Accounting Systems	3
Acct. 193	Business Budgeting	3
Bus. Adm. 102	Business Management	3
Bus. Adm. 131	Business Finance	6
Bus. Adm. 161–62	Commercial Law	3
Econ. 121	Money and Banking	3
		39
Group Option (to be selected from one of the following groups)		15
Electives (to be selected in consultation with the adviser)		6
	Total	60

All Accounting majors must complete the *required* courses listed above. The group options shown below provide specialization in public accounting, commercial and industrial accounting, and governmental accounting and budgeting. Selection of the option and the courses (15 semester hours) to be taken in it must be made in consultation with the adviser.

Group I—Public Accounting
This group option is made up of selected courses offered by the departments of Accounting, Business and Public Administration, and Political Science.

Group II—Commercial and Industrial Accounting
This group option is made up of selected courses offered by the departments of Accounting, Business and Public Administration, Economics, and Statistics.

Group III—Governmental Accounting and Budgeting
This group option is made up of selected courses offered by the departments of Accounting, Business and Public Administration, Political Science, and Economics.

Business and Economic Statistics

		Semester Hours
Stat. 111	Business and Economic Statistics I	3
Stat. 112	Business and Economic Statistics II	3
Stat. 117	Analysis of Variance	3
Stat. 118	Correlation and the Chi-Square Test	3
Stat. 195–96	Reading and Research in Business and Economic Statistics	6
Bus. Adm. 101	Business Organization and Combination	3
Bus. Adm. 102	Business Management	3
Econ. 101–2	Economic Analysis	6
Econ. 105	Business Cycles	3
Phil. 121–22	Logic and Scientific Method	6
Electives (A)	(To be selected from Statistics)	6
Electives (B)	(From Accounting, Business Administration, and Economics in consultation with the adviser)	15
	Total	60

Examinations for Waiving Curriculum Requirements

A student wishing to omit a required course may take such examination as the department prescribes, and, on passing satisfactorily, he may be relieved of the curriculum requirement in that subject and may qualify for registration in an advanced course. Passing of this examination does not entitle the student to any hours of credit toward the degree. A student desiring to take such examinations should make the request of the Dean and pay the required fee.

Graduate Record Examinations

During the final semester of the senior year students in the School of Government are required to take the following Graduate Record Examinations: the Aptitude Test, which provides a measure of general scholastic ability at the graduate level; and Area Tests (achievement), which measure breadth of knowledge and understanding in three broad areas of the liberal arts: Natural Science, Social Science, and the Humanities. (For further information concerning the Graduate Record Examinations, see page 51.)

THE MASTER'S DEGREES

Upon the satisfactory completion of the graduate requirements of the School of Government, one of the following degrees is conferred: (1) Master of Arts in Government with a major in Foreign Affairs, Economic Policy, Accounting, Business and Economic Statistics, Counseling, or Psychometrics; (2) Master of Arts in Public Administration; (3) Master of Arts in Personnel Administration; (4) Master of Business Administration.

Admission to Candidacy

A student is formally recognized as a candidate for the Master's degree only when his application for candidacy has been approved.

A 3.00 average in the undergraduate major is normally required for admission to graduate study.

The candidate for the Master's degree who is deficient in undergraduate preparation may take a comprehensive examination on his undergraduate major field. Passing of this examination entitles the student to admission without taking specific courses to make up his deficiencies.

In courses taken to satisfy undergraduate deficiencies, the student must maintain at least a 3.00 average to be eligible for admission to graduate study.

Candidates for the Master of Arts degree in Foreign Affairs or in Economic Policy must show a reading knowledge (certified by the appropriate language department) of at least one modern foreign language, to be approved by the Dean. Such examination should be taken before the student begins the second fifteen hours of his work.

REQUIREMENTS FOR THE DEGREES

A minimum of thirty semester hours of work, as outlined in the curricula on pages 194–98, must be completed successfully. Variations from these curricula require the permission of the Dean.

No part of the minimum requirements may be taken in any other institution.

A second-group course (numbered 101–200) may be counted toward the Master's degree only when registration for advanced credit has been approved at the beginning of the course by the Dean and by the officer of instruction, and provided that the student has done such extra work in the course as may be prescribed by the instructor.

All work for the Master's degrees must be completed in three years, unless an extension of time is granted by the Dean's Council. Validation examinations may be required.

In addition to the course examinations, the candidate must pass a comprehensive written examination in his major field. These examinations are scheduled two or more times a year (usually in December and in April), and should be taken shortly before or shortly after the completion of the prescribed course work. The candidate must consult with his adviser, well in advance, as to the date of his examination and the definition of the subject-matter fields which this examination is to cover. An oral examination on his thesis may also be required.

No work counted toward a Bachelor's degree may be counted toward a Master's degree.

A student who expects to continue his studies for the degree of Doctor

of Philosophy (Graduate Council) or Doctor of Business Administration, after receiving the Master's degree, will be assisted in planning his program so that he may qualify for admission to candidacy for the Doctorate.

Residence

No credit is granted for work done in absentia, i.e., without formal instruction, except for the thesis, which may be completed in absentia with the permission of the department or committee concerned.

Scholarship

A student whose scholarship is unsatisfactory may be suspended by the Dean. Grades for graduate work are Excellent, Satisfactory, and Unsatisfactory; for further details, see page 47. **A graduate student must have at least six semester hours with the grade of "Excellent" in his completed Master's program.**

Curriculum Requirements

A normal program includes a minimum of twenty-four semester hours of course work and the thesis (six semester hours), to be selected from the courses listed under the chosen major field, and such other courses as may be necessary. Programs should be prepared in advance in consultation with the adviser and submitted to the Dean on the appropriate form; if the program is not completed at the time of registration this must be attended to not later than one month following registration.

The Thesis

Students who plan to complete work for a Master's degree in one year should register for the thesis at the beginning of the year; otherwise the thesis should be registered for not later than the beginning of the final year. The choice of the thesis subject must be approved by the professor in charge and recorded in the Office of the Registrar by the date announced in the University calendar. The typewritten thesis in its final form must have the approval of the professor in charge and must be presented to the Dean by the student not later than the date announced in the University calendar. Requirements in regard to the form of the thesis are stated on pages 51–52, and additional information will be supplied by the Dean.

Payment of tuition for the thesis entitles the candidate, during the academic year of registration, to the advice and direction of the member of the Faculty under whom the thesis is to be written. In case a thesis

is unfinished, an additional successive academic year is granted without further tuition payment. If the preparation of the thesis extends beyond the two-year period, it must be registered for again, and tuition paid on the same basis as for a repeated course.

MASTER OF ARTS IN GOVERNMENT

This degree is offered in six different curricula which are described below.

Students who have a special need for integrating courses from two or more of the major fields of concentration for the degree of Master of Arts in Government may request approval, by a faculty committee, of a special major program. All rules and regulations for the degree of Master of Arts in Government will apply to such special programs.

Foreign Affairs

Prerequisite: an undergraduate major in foreign affairs, economics, history, or political science, depending upon the field of specialization. Any course deficiency in foreign affairs must be made up.

The program in Foreign Affairs is offered in four fields of specialization: International Economics, International Politics, International Communications, and Regional Studies (e.g., the Soviet Orbit).

International Economics.—Graduate courses in economics (numbered 200 and over) in the field of international trade, the balance of payments, international financial policies, and international economic policies form the principal part of this specialization. Graduate courses in economic theory are recommended. Other courses may be included with the consent of the adviser.

International Politics.—Graduate courses in political science and history (numbered 200 and over), in international law, international politics, international organization, diplomatic history, and American foreign policy, comprise the principal requirements for this specialization. Related courses may be added with the consent of the adviser.

International Communications.—Graduate courses (numbered 200 and over) in political science, psychology, sociology, and geography with 12 hours (one-half of the course work) in the fields of public opinion, international information, psychological warfare, and communications, and 12 hours (one-half of the course work) in the fields of international politics and area studies. The adviser in all cases must approve the course selections.

Regional Studies.—Graduate courses in economics, political science, history, and geography (numbered 200 and over) dealing with a geographic region, such as Latin America, Europe, the Soviet Orbit, or the Pacific Area, comprise the principal requirements. Other courses of broader scope in economics, history, and political science are recommended as part of the program. The adviser in all cases must approve such selections.

The listing of graduate courses for these fields of specialization is given in the departmental offerings for Economics, History, Political Science, Geography, Psychology, and Sociology.

Economic Policy

Prerequisite: an undergraduate major in economics or the equivalent.

Graduate courses in economics required: Economic Policy—Economics 265–66. Recommended: courses in income and employment, national income, business cycles, monetary and fiscal policy, economic theory, and statistics. These courses and others that may be appropriate are to be selected with the consent of the adviser.

Accounting

Prerequisite: an undergraduate major in accounting or the equivalent. The program in Accounting requires the following courses:

		Semester Hours
Acct. 212	Managerial Accounting	3
Acct. 231	Contemporary Accounting Theory	3
Acct. 272	Auditing Practice	3
Acct. 295–96	Seminar in Accounting	6

The remaining nine hours of course work are to be selected from courses in or related to accounting with the approval of the adviser.

Business and Economic Statistics

Prerequisite: an undergraduate major in business and economic statistics, or the equivalent; such work must include a minimum of 24 semester hours of second-group courses in statistics and a minimum of 18 semester hours in second-group courses in accounting, business administration, and economics.

The Master of Arts program requires at least 12 semester hours of graduate courses in statistics. The remaining 12 semester hours are to be selected from graduate work offered by the departments of Accounting, Business and Public Administration, Economics, and Statistics with the approval of the adviser.

Counseling

Prerequisite: an undergraduate major in psychology, business administration, or education; or an undergraduate major in the social sciences appropriate to specialization in this field. The undergraduate background should include necessary basic training in such fields as psychology, sociology, statistics, labor economics, and business management or public administration.

The Master of Arts program in Counseling requires the following courses:

		Semester Hours
Psychology 220	Seminar: Abnormal Psychology	
or		
Psychology 225	Seminar: Mental Hygiene	3
Psychology 227	Seminar: Counseling and Guidance	3
Psychology 228	Seminar: Techniques of Counseling	3
Psychology 229	Seminar: Occupational and Educational Information	3
Psychology 236	Seminar: Analysis of the Individual for Purposes of Counseling	3

The remaining nine hours are elective, with the approval of the adviser.

Psychometrics

Prerequisite: an undergraduate major in psychology, statistics, or the social sciences which includes twelve credits in psychology (general psychology, tests and measurements, personnel psychology, and related psychology courses); general statistics; mathematics through college algebra (preferably through calculus).

The Master of Arts program in Psychometrics requires the following courses:

		Semester Hours
Psychology 231	Test Construction	3
Psychology 234	Seminar: Test Theory	3
Psychology 246	Seminar: Personnel Measurement Techniques	3
Psychology 299–300	Thesis	6
Statistics 105	Statistics in Psychology and Education	3
Statistics 117	Analysis of Variance	3
Statistics 118	Correlation and the Chi-Square Test	3

The remaining six hours are elective, with the approval of the adviser.

MASTER OF ARTS IN PUBLIC ADMINISTRATION

The purpose of the program in Public Administration is to prepare graduates to enter public service in the field of administration and to improve the competence of those already in public employment. The program assumes that effective performance at all levels of administration calls for an understanding of the human factors involved, a knowledge of the nature and institutional characteristics of administration in the public service, and an ability to apply the methods and techniques of management. An understanding of all three elements is provided by bringing together into the program different disciplines, including courses in political science, business administration, psychology, economics, accounting and statistics.

Prerequisite: an undergraduate background in the social sciences, business administration or, in the absence of such course work, appropriate experience in government service.

The candidate for the degree must successfully complete a minimum of 30 hours at the graduate level. This will include 6 hours of thesis. Of the remaining 24 semester hours, students must select at least 6 hours from each of the three groups indicated below, and such other courses as are necessary to complete the program. Selection of all courses by the student must have the approval of the adviser.

Group I. Human Factors in Administration

		Semester Hours
Bus. Adm. 288	Executive Leadership	3
Psych. 228	Seminar: Techniques of Counseling	3
Pub. Adm. 231	Public Personnel Management	3
Pub. Adm. 232	Personnel Procedures and Problems	3
Pub. Adm. 233	Employee Development and Utilization	3

Pub. Adm. 237	Intermediate Management and Supervision	3
Pub. Adm. 241	Human Relations in Governmental Administration	3
Pub. Adm. 272	Reading and Conference Course in Public Personnel Administration	3

Group II. Methods and Tools of Management

Acct. 141	Governmental Accounting	3
Acct. 246	Governmental Accounting and Budgeting Problems	3
Bus. Adm. 109	Office Management	3
Bus. Adm. 268	Management Engineering	3
Psych. 255	Seminar: Techniques of Opinion and Attitude Measurement	3
Pub. Adm. 216	Administrative Analysis and Research	3
Pub. Adm. 217	New Tools of Management	3
Pub. Adm. 221–22	The Staff Functions in Government	3
Pub. Adm. 254	Controllership in the Federal Services	3
Pub. Adm. 259	Government Procurement and Property Management	3
Stat. 109	Managerial Statistics	3

Group III. Program Management and Policy Direction

Bus. Adm. 102	Business Management	3
Bus. Adm. 286	Management in the Armed Forces	3
Econ. 261–62	Public Finance and Fiscal Policy	6
Econ. 266	Problems of Governmental Economic Policy	3
Pol. Sc. 161–62	Administrative Law	6
Pub. Adm. 210	The Management Function	3
Pub. Adm. 211	Problems of Governmental Organization	3
Pub. Adm. 212	Case Studies in Administration	3
Pub. Adm. 225–26	Internship in the Administrative Process	6
Pub. Adm. 251	Governmental Budgeting	3
Pub. Adm. 252	Planning and Administering the Fiscal Program	3
Pub. Adm. 260	Policy Formulation and Administration	3
Pub. Adm. 261	Public Opinion and the Administrator	3
Pub. Adm. 271	Reading and Conference Course in Public Management and Administration	3

MASTER OF ARTS IN PERSONNEL ADMINISTRATION

The purpose of the program for the degree of Master of Arts in Personnel Administration is to train graduates in personnel management techniques and problems. While the emphasis is placed on governmental personnel work, the curriculum may be adapted to the interest of graduates who plan a career in personnel relations in business.

Prerequisite: an undergraduate background in the social sciences or, in the absence of such course work, appropriate experience in personnel work. Specific course prerequisites will be required.

In addition to the thesis, the program requires 24 graduate credits, in general developed from the following, with the approval of the adviser:

		Semester Hours
Bus. Adm. 291–92	Seminar in Business Management	6
Econ. 241	Labor Economics	3
Econ. 244	Labor Relations	3
Psych. 227	Seminar in Counseling and Guidance	3
Psych. 244	Seminar: Job Analysis and Evaluation	3
Psych. 245	Seminar: Employee Motivation and Morale	3
Psych. 246	Seminar: Personnel Measurement Techniques	3
Pub. Adm. 210	The Management Function	3
Pub. Adm. 231	Public Personnel Management	3
Pub. Adm. 232	Personnel Procedures and Problems	3
Pub. Adm. 233	Employee Development and Utilization	3
Pub. Adm. 241	Human Relations in Governmental Administration	3
Pub. Adm. 272	Reading and Conference Course in Public Personnel Administration	3

MASTER OF BUSINESS ADMINISTRATION

This curriculum provides the graduate student with the general and specialized training which will help him advance to responsible positions in business. Business training is also essential for many positions in government service and the program offers such training.

Normally, a student with an acceptable (*B* average) undergraduate major in Business Administration, or the equivalent, can complete the work for the Master of Business Administration in one year. All such programs must be approved by the adviser. Students with course deficiencies, but with good academic records, will be admitted to study for the Master of Business Administration and will be required to take up to 60 semester hours of work for this degree. The amount of work over and above 30 semester hours, and the courses to be taken, will be determined by the adviser, with the approval of the Dean.

The Master of Business Administration program, with the approval of the adviser, may include certain graduate courses from other departments, such as Economics, Accounting, and Statistics.

DOCTOR OF BUSINESS ADMINISTRATION

The work for this degree is under the supervision of the Committee on Doctoral Studies of the School of Government.

An applicant must have the degree of Master of Business Administration, Master of Arts in Business Administration, or Master of Arts in a related field, or the equivalent of such degrees, together with acceptable personal qualities and a capacity for creative scholarship. Each applicant must demonstrate his competence in Statistics and Accounting, either by qualifying examinations or acceptable university credits in these subjects. He must satisfy this requirement in at least one of the two

subjects before his application to study for the degree of Doctor of Business Administration will be considered.

After admitting an applicant, the Committee on Doctoral Studies, in consultation with the applicant, will designate six fields of study and appoint an adviser to guide the student in his work in these fields. As part of this work, the student must complete a minimum of thirty semester hours in graduate courses. Additional course work may be prescribed by the adviser.

When the applicant has satisfied his adviser and the Committee of his readiness to take the General Examination, this Examination will be scheduled.

The General Examination is a written comprehensive on fields of study not limited to the subject matter of courses taken in these fields. Two fields of study are required of all applicants: Economic Theory and Business and Economic History. The four additional fields, selected by the Committee and the applicant, will be drawn from the following list: Marketing, Organization and Management, Business Finance and Investments, Personnel Management, Public Administration, Accounting Theory, Money and Banking, Statistics, Risk and Risk Bearing, Transportation and Traffic Management, and such others as the Committee may designate.

Upon successful completion of the General Examination and approval of the subject of the doctoral dissertation, the student may be admitted to candidacy by the Committee on Doctoral Studies. The candidate's research and the preparation of his dissertation are supervised by a Research Adviser designated by the Committee.

The Final Examination of the candidate consists of his oral defense of the dissertation. The examination will be given by a committee appointed by the Committee on Doctoral Studies. Upon successful completion of this oral examination the candidate will be approved for the degree of Doctor of Business Administration by the Committee on Doctoral Studies.

SPECIAL PROGRAMS

The Navy Graduate Comptrollership Program, sponsored by the Naval Post Graduate School, provides 40 semester hours of work in comptrollership and related fields for a selected group of Naval and Marine officers. The Master's degree is awarded upon successful completion of this full-year program.

In cooperation with the College of General Studies, the School of Government conducts the Air Force Resources Management Training Program, under the sponsorship of the Department of the Air Force.

The Air Force Advanced Management Program, sponsored by the United States Air Force Institute of Technology, provides 40 semester

hours of work in advanced management and supporting fields for a selected group of Air Force officers. Most of the officers receive the Master's degree upon successful completion of this full-year program.

For another group of officers, sponsored by the United States Air Force Institute of Technology, the School of Government offers the graduate curriculum in Military Economics and Politics; this specialized program is also open to qualified civilians, who may enroll with special permission of the Dean.

The School of Government cooperates with the College of General Studies in the off-Campus program of that College, particularly in the fields of controllership, governmental administration, and personnel administration.

The Department of Business Administration offers work in the field of property and casualty insurance as part of the educational program of the American Institute for Property and Liability Underwriters, Inc.

BUREAU OF BUSINESS AND ECONOMIC RESEARCH

The Bureau, as part of the School of Government, was established to conduct research in both the fields of business and economics. This work is under the direction of the Executive Committee of the Bureau of Business and Economic Research. Special attention is given to problems of the metropolitan area of Washington, D. C. Research projects are also sponsored by public and private agencies. Both faculty and students of the School of Government participate in the activities of the Bureau of Business and Economic Research. Results of research activities as well as abstracts of selected Masters' theses are reproduced and disseminated by the Bureau.

THE COLLEGE OF GENERAL STUDIES

Mitchell Dreese, Ph.D., *Dean of the College of General Studies*
John Francis Latimer, Ph.D., *Assistant Dean of the College of General Studies*
Grover LaMarr Angel, Ed.D., *Director of the Off-Campus Division*
Mary Ellen Coleman, A.M., *Director of the Reading Clinic*
Karl Ernest Stromsem, Ph.D., *Adviser on Government Intern Scholarships*

THE DEAN'S COUNCIL*

Benjamin Douglass Van Evera
Arlin Rex Johnson
Ralph Windsor Ruffner
Carl Hugo Walther
Robert Dale Campbell
Philip Highfill, Jr.

GENERAL INFORMATION

INTRODUCTORY

The objectives of the College of General Studies may be stated briefly as follows: to extend the adult education facilities of the University; to introduce experimental procedures in conducting programs of study for mature students; and to provide auxiliary educational services other than formal programs of study for the community.

To carry out these objectives the College of General Studies, with offices located at 706 Twentieth Street NW., is organized to include the following divisions: (1) The Off-Campus Division; (2) The Campus Division; and (3) The Division of Community Services.

Off-Campus Division

In recent years, employee in-service training has been increasingly emphasized in government, education, business, and industry. Service personnel in nearby military and naval installations have likewise been increasingly interested in off-duty education as a means of working toward academic degrees and increased professional proficiency. The Off-Campus Division of the College of General Studies works closely with personnel administrators, training officers, school officials, and others interested in developing programs of in-service training and brings the educational resources of the University to bear on such programs. Credit and non-credit courses are organized in any field in which there is suf-

* The President of the University, the Dean of Faculties, the Dean and the Assistant Dean of the College are members ex officio of the Council.

ficient demand and for which instructional facilities can be made available. These courses meet at the time and place most convenient for the students enrolled and may begin at any time of the year. Credit courses are accepted by any school or college of the University provided (1) the student is accepted for degree candidacy in that school or college; (2) the courses in question are within the scope of the curriculum requirements; and (3) the maximum number of semester hours which can be taken in any school or college of the University other than that in which the student is a degree candidate is not exceeded. Credit courses may also be transferred to other colleges and universities.

Admission to Course Work

Admission to an off-campus course does not constitute admission to degree candidacy or a campus division of the University.

A simplified procedure for admission and registration in off-campus courses is conducted at or prior to the first meeting of the class. Transcripts of previous academic work are not required. Registration in credit courses is restricted to those whose qualifications indicate that they are able to complete the course successfully. In general, off-campus non-credit courses are open to any individual interested in enrolling. However, when a course is organized at the request of some particular agency or group, admission may be restricted to the students recommended by the sponsoring organization. A limit on the size of classes may have to be imposed in order to maintain the quality of instruction.

Admission to Degree Candidacy

In agencies and service installations where there is sufficient enrollment to permit offering the necessary range of courses, it is possible to earn the Associate in Arts, Bachelor of Arts, or Master of Arts degrees without campus studies. For further information, see the bulletin of the College of General Studies.

Campus Division

This Division has been established in recognition of the fact that there are adults, well qualified to undertake a particular program of college work, whose academic preparation would not ordinarily qualify them for admission to a previously established school or college of the University, without considerable prerequisite work. It is also recognized that an adult, through his work experience, may have gained competency in some particular area of learning. This knowledge may be validated by special examinations to entitle him to advanced standing toward a degree.

For further information, see the bulletin of the College of General Studies.

Division of Community Services

This Division was organized to provide needed auxiliary educational services and to promote programs designed to supplement the formal educational offerings of the University.

Non-credit courses in a wide variety of subject fields will be set up at the request of any interested group. There will be no entrance requirements. The length of each course will be determined by the wishes of the sponsoring group and the nature of the subject to be studied.

The George Washington University Reading Clinic offers both diagnostic and corrective work for small groups or individuals and reading improvement techniques for small classes. All courses are designed to meet particular individual needs whether on a remedial basis or for accelerated reading comprehension.

The Government Management Intern Scholarship Program offers annually fifty scholarships to assist federal agencies in training carefully selected young men and women for administrative leadership in the government career service. Each scholarship provides a tuition-free course of three semester hours a term and appropriate academic credit (up to six semester hours) for the successful completion of training assignments required in any agency program which has been evaluated by the University.

The George Washington Counseling Center offers counseling programs designed to assist individuals in making vocational and educational plans. The services offered include the following: (1) aid in vocational choice; (2) checking present training objectives; (3) diagnosis of academic difficulties; (4) determining suitability of present job; and (5) assistance in understanding individual's abilities, aptitudes, and interests.

FEES

The tuition fee for off-campus credit courses is $12 a semester hour. The fees for non-credit courses and eight-week credit courses are payable in full at the first meeting of the course. By special arrangement in fifteen-week credit courses, payments may be made in three equal installments.

THE DIVISION OF UNIVERSITY STUDENTS

Elmer Louis Kayser, Ph.D., LL.D., *Dean of the Division of University Students*

John Gage Allee, Jr., Ph.D., *Assistant Dean of the Division of University Students*

THE DEAN'S COUNCIL *

Ralph Dale Kennedy — Francis Edgar Johnston

Ira Bowers Hansen

GENERAL INFORMATION

INTRODUCTORY

The Division of University Students was established in 1930. In this Division are registered mature students who wish to undertake University courses for credit either here or elsewhere or as auditors, but who are not at this time working toward degrees in this University.

REGULATIONS

Students in the Division of University Students are subject to, and are expected to familiarize themselves with, the regulations concerning ADMISSION, REGISTRATION, FEES AND FINANCES *stated on pages 12–27; the University regulations stated on pages 46–54; and the regulations concerning* PROBATION, SUSPENSION, AND WARNINGS *which are the same as those stated on pages 64–65 under the Junior College.*

TRANSFER TO REGULAR STATUS

A "University student" may be transferred, at his request, to another college or school of the University only upon complying with the regulations of the specific college or school to which he wishes to transfer. The student should familiarize himself with the regulations printed in the University CATALOGUE concerning admission, residence, amount and quality of work. He should also specifically note the University regulations regarding transfers within the University on pages 48–49, and regarding graduation requirements on pages 50–52, and observe that when a student transfers into a degree-granting school or college, to be eligible for a degree he must meet not only all the general graduation requirements, but also such special requirements as may apply in his particular curriculum.

* The President of the University, the Dean of Faculties, the Dean and the Assistant Dean of the Division are members ex officio of the Council.

THE DIVISION OF SPECIAL STUDENTS

Warren Reed West, Ph.D., *Dean of the Division of Special Students*

THE DEAN'S COUNCIL*

Thelma Hunt

Fred Salisbury Tupper

Carl Hugo Walther

GENERAL INFORMATION

INTRODUCTORY

The Division of Special Students was organized in 1944. To this Division may be admitted students who are in the process of qualifying for degree candidacy. Students in this Division are designated "special students".

REGULATIONS

Students in the Division of Special Students are subject to, and are expected to familiarize themselves with, the regulations concerning ADMISSION, REGISTRATION, FEES AND FINANCES *stated on pages 12–27; and the University regulations stated on pages 46–54.*

SCHOLARSHIP

A student in this Division may be dropped for reasons of scholarship at any time his quality-point index falls below 2.00.

The system of grading and computing scholarship is described in detail on pages 46 and 47.

ACADEMIC SCHEDULE

The schedule of the "special student" is made up of courses required in the curriculum to which he wishes to transfer. The choice of courses must be approved by the Dean. If the student has not completed the language requirements of this curriculum at the time of his admission to the University, he must include three hours of language in each twelve hours of work until this requirement is met. Second- or third-group courses may not be taken unless all first-group requirements have been met or are being met concurrently.

Credits earned at other institutions are evaluated at the time of ad-

* The President of the University, the Dean of Faculties, and the Dean of the Division are members ex officio of the Council.

mission to this Division. They are withheld until the Special Student transfers to a degree-granting college or school, when those appropriate to his curriculum are applied toward advanced standing.

In each individual case, the schedule will be reduced when it is deemed advisable.

Transfer to Regular Status

A "special student" may transfer to a degree-granting college or school of the University when he has satisfactorily completed his program in the Division of Special Students and has met the admission requirements of the college or school to which he wishes to transfer. The student should familiarize himself with regulations printed in the University Catalogue concerning admission, residence, amount and quality of work. He should also specifically note the University regulations regarding transfers within the University on pages 48–49 and regarding graduation requirements on pages 50–52, and observe that when a student transfers into a degree-granting school or college, to be eligible for a degree he must meet not only all the general graduation requirements, but also such special requirements as may apply in his particular curriculum.

Advisory System

Students in the Division of Special Students are expected to consult with an adviser in the Office of the Dean at least once each semester. Any student who has a question in regard to his status, or whose grades are below *C*, or who is in academic difficulty, is urged to make an appointment promptly without waiting for a request from the Dean.

DIVISION OF AIR SCIENCE

Carl Swyter, B.S. in E.E., Colonel, United States Air Force, *Director of Air Science*

COMMITTEE ON MILITARY SERVICE DELAY AND AIR FORCE ROTC ADVANCED COURSE SELECTION BOARD*

Willard Alfred DeLano, *Chairman*
Martin Alexander Mason — George Martin Koehl
Robert Henry Mucha
Harold Robert Henthorne, *Recorder*

GENERAL INFORMATION

INTRODUCTORY

The Air Force Reserve Officer's Training Corps (Air Force ROTC) unit was established at the University in 1951 under authority of Section 40–47C, National Defense Act of June 3, 1916, as amended. Air Force personnel, approved by the President of the University, are detailed by the Department of the Air Force to supervise and instruct the Air Force ROTC cadets.

The mission of the Air Force ROTC program is to select and prepare students through a permanent program of instruction to serve as commissioned officers in the Regular and Reserve components of the United States Air Force. Classroom instruction and leadership training is provided to develop in the student the knowledge and the attributes of character, personality, and leadership required of officers in the United States Air Force. Emphasis is placed on arousing in the student a desire to serve his country as a flying officer.

COURSE OF STUDY

The course of study is divided into a basic course covering the first two years and an advanced course covering the junior year, summer training unit, and senior year. Twenty-four hours of elective credit earned in this program may be applied toward a degree. Three hours a semester for the basic course and three hours a semester for the advanced course.

The program takes into consideration the fact that many of the academic subjects in which college students are enrolled have a direct rela-

* The President of the University, the Dean of Faculties, and the Director of the Division are members ex officio of this Committee.

tionship to a military career as well as to a civilian career. The courses of the Air Force ROTC program have been carefully selected to supplement those academic subjects. They also afford a means for practical training in organization, leadership, and discipline, which will be of value in industrial or professional careers. The duties and responsibilities of squadron level officers, oral and written expression, and the techniques of problem solving are emphasized throughout the course both in theory and practice.

See "Department of Air Science" for a list of the subjects covered. In addition thereto, orientation flights, simulated flights in Link Trainer, and field trips to Air Force bases are available to selected cadets on a voluntary basis.

Eligibility Requirements

Enrollment in the Division of Air Science is open to all full-time men students and a limited number of women students who are at least 14 years of age, citizens of the United States, physically fit, of good character, and candidates for Bachelor's degrees. Men and women enrolled in Air Force ROTC are designated Cadets and Cadettes, respectively. Cadets who successfully complete the basic course or have equivalent active military training may be selected to enter the advanced course. Cadets in the advanced course receive from the Government a subsistence allowance of approximately $500, which is exempt from income tax. During the period of summer training the advanced cadet receives, in addition, $75 a month, plus food, lodging, and travel expense. Uniforms, textbooks, and training materials are provided for all Air Science courses.

A cadet enrolling in the basic course must agree to successfully complete the two-year course as a prerequisite to graduation from the University. A cadet applying for enrollment in the advanced course must, if selected, sign a contract to complete the course as a prerequisite to graduation; attend a four- to six-week summer training unit; and fulfill all the obligations conjunctive with military service delay specified below.

A limited number of women may enter the advanced course and, upon successful completion thereof, may be considered for commissions as officers in the United States Air Force Reserve.

Military Service Delay

Deferment from induction under the Selective Service Act of 1951 may be granted to selected cadets within authorized quotas. Normally, a cadet is not considered for draft deferment until he has completed one semester's work in the University, with a quality-point index of at least 2.00. A cadet's deferment is subject to withdrawal if his quality-point index falls below 2.00.

To receive a deferment a cadet must agree to complete the basic course; to complete the advanced course at the proper time if selected for enrollment therein; to accept a Reserve Commission if tendered; to serve on active duty for a period of not less than three years if called; and to remain a member of a reserve component of the Air Force for eight years from the date of his commission.

It is the cadet's responsibility to notify his local draft board of this agreement and the termination thereof, as well as to notify the Director of Air Science whenever he intends to transfer to another institution.

Student Honorary Military Societies

The Arnold Air Society.—A national honorary military society of Advanced Air Force ROTC cadets established to further the mission, traditions, and concept of the United States Air Force as a means of national defense, to promote American citizenship, and to create a close and more rewarding relationship among the Air Force ROTC cadets. The national organization founded in 1947, was named in honor of the late General of the Air Force Henry Harley Arnold. The local squadron established in 1952, was named in honor of General Carl Spaatz (retired), the first Chief of Staff of the United States Air Force. Only advanced Air Force ROTC cadets are eligible for election to membership. Members are authorized to wear a blue and gold auguilette and ribbon on their cadet uniforms.

Pershing Rifles.—A national honorary military society founded in 1894 by Lieutenant (later General of the Armies) John Joseph Pershing. Its purpose is to encourage, preserve, and develop the highest ideals of the military profession, promote American citizenship, create a closer and more efficient relationship, and provide appropriate recognition of a high degree of cadet achievement. Only basic ROTC cadets are eligible for election to membership. Members are authorized to wear a blue and silver cord and ribbon on their cadet uniforms.

Flying Sponsors.—A local women's honorary organization established in 1952 to sponsor Air Force ROTC activities and encourage applications for flying training.

REGULATIONS

Cadets and students in the Division of Air Science are subject to and are expected to familiarize themselves with the University regulations stated on pages 12–27 and 46–54; the regulations of the college, school, or division in which enrolled; and the regulations of the United States Air Force pertaining to Air Force ROTC cadets. Individual copies of Cadet Regulations are issued upon enrollment.

THE SUMMER SESSIONS

Burnice Herman Jarman, A.M., Ed.D., *Dean of the Summer Sessions*

THE DEAN'S COUNCIL*

Wood Gray — Ira Bowers Hansen

During the summer of 1956 the University offers an eight-week session for undergraduate and graduate students in the Arts and Sciences. The Law School offers work in two six-week sessions. The School of Education offers a special six-week session for teachers, with a pre-session of three weeks, post-session of three weeks, and a twelve-week evening session.

During the summer of 1956, courses are offered in the Junior College, Columbian College (the senior college), the Law School, the School of Pharmacy, the School of Education, the School of Government, and the College of General Studies.

For a complete statement concerning summer-term work, see the Summer Sessions catalogue.

* The President of the University, the Dean of Faculties, the Dean of the Summer Sessions are members ex officio of the Council.

ADMINISTRATIVE UNITS

HEALTH ADMINISTRATION

Daniel LeRay Borden, A.M., M.D., *University Surgeon, Director*
Howard Robert Unger, A.B., M.D., *University Physician*
Gloria Godbey, A.B., M.D., *Associate University Physician*
Robert Howe Harmon, A.B., M.D., *Associate University Physician*
Ronald Atmore Cox, A.B., M.D., *Associate University Physician (Eye)*
Richard Bernard Castell, A.B., M.D., *Associate University Physician*
Alfred Brigulio, M.D., *Associate University Physician*
Hugh Osgood House, M.D., *Associate University Physician (Nose and Throat)*
Benjamin Franklin Dean, Jr., M.S., M.D., *Associate University Surgeon*
Beatrice McBride, R.N., *Nurse-Secretary*

The University maintains a health service that is primarily diagnostic in its intent. For medical emergencies and health consultations there is, on the Campus, a Student Health Clinic open from 9:00 A.M. to 5:00 P.M. with physician and nurse in attendance. There is also a rest room for women, with a graduate nurse in charge.

Medical privileges include: (1) the physical examination of every student entering from secondary school;* (2) three visits by the University physician or surgeon, office or residence (District of Columbia), in any one illness, exclusive of a specialist, surgical operation, laboratory, or X-ray examination; (3) hospitalization, including board and nursing, in the University Hospital for not more than one week during any twelve-month period—the necessity to be determined by the Director of Health Administration. The duration of hospitalization period (maximum, one week) is also to be determined by the Director of Health Administration.

This medical benefit does not apply to illness or disability incurred previous to the University term or prior to payment of tuition fees.

The student is allowed, if he so desires, to engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

Rules: (1) The Director of Health Administration is empowered to limit or deny the medical benefits where, in his discretion, a student has, by his misconduct or breach of the rules of the University, made himself ineligible; (2) the Director of Health Administration has authority to determine the necessity and length of hospitalization; (3) a student who has severed his connection with the University is ineligible for

* A charge of $2 for a special physical examination is made by the University if a student fails to appear for a physical examination during the period set for this purpose.

medical benefits; (4) a student intending to train for an athletic team is required to pass a thorough examination at the begenning of each semester; (5) the above regulations apply also during the summer term of the University.

The University is not responsible for injuries received in inter-collegiate or intra-mural games, or in any of the activities of the physical education departments.

VETERANS EDUCATION

The George Washington University is approved to provide training for veterans under the provisions of Public Laws 346, 16, 550, and 894. The Office of Veterans Education, 2029 H Street NW., Building Q, operates as a service bureau for veterans interested in studying at the University and acts in a liaison capacity between the University and the Veterans Administration. Here information may be obtained concerning the educational program of the University and the procedure for securing educational benefits under the GI bills. Veterans residing in the Washington area will often find it to their advantage to seek advice at the Office of Veterans Education before applying to the Veterans Administration for a Certificate.

Public Law 346
(World War II GI Bill)

The educational benefits provided for veterans under Public Law 346 terminate July 25, 1956, except as described below.

The Armed Forces Voluntary Recruitment Act of 1945 provided that persons enlisting or reenlisting in the armed forces between October 6, 1945, and October 5, 1946, may count the entire period of such enlistment or reenlistment as war service for purposes of GI Bill benefits. Such enlistees, therefore, may substitute the date that their period of enlistment ended in computing their benefits where that date is later than July 25, 1947.

It is suggested that a veteran having any question regarding his eligibility consult the Office of Veterans Education or the Veterans Administration, Veterans Benefits Office, Munitions Building, Constitution Avenue and Twentieth Street, NW., Washington 25, D.C.

Public Law 550
(Korean GI Bill)

In order to be eligible for the benefits under this GI Bill, a veteran must have been in service between June 27, 1950 and January 31, 1955, and must no longer be on active duty. For further information concerning these benefits, it is suggested that he contact the Office of Veterans Education or Veterans Administration, Veterans Benefits Office, Munitions Building, Constitution Avenue at Twentieth Street, NW., Washington 25, D. C.

At least thirty days prior to registration the veteran desiring to attend

under this GI Bill should apply to Veterans Administration, Veterans Benefits Office, Munitions Building, Constitution Avenue at Twentieth Street, NW., Washington 25, D.C., for a Certificate for Education and Training, for presentation to the Office of Veterans Education at the time of registration. A photostatic copy of separation papers must accompany the original application for certification.

Public Laws 16 and 894
(Vocational Rehabilitation)

Disabled veterans desiring vocational rehabilitation under either GI Bill should apply to Veterans Administration, Veterans Benefits Office, Munitions Building, Constitution Avenue at Twentieth Street, NW., Washington 25, D.C., for approval of their training objectives at least sixty days prior to registration.

Admission

The entrance requirements for the Junior College, Columbian College, and the School of Government, in other than the preprofessional curricula, have been somewhat modified for veterans who are deficient in the regular requirements for admission, but who have been found by psychological and educational tests able to undertake college work. Veterans who have been enrolled in another educational institution since leaving the service, or who have been out of the service for more than one year prior to the beginning of the semester for which they seek admission, must qualify under the regular admissions policies. (For admission requirements and procedure, see pages 12–22.)

Credit for work done in the service schools is granted by the Junior College, Columbian College, the School of Engineering, and the School of Government provided the veteran has not been out of the service for three years or more. To be considered for such credit veterans should submit to the Director of Admissions photostatic copies of their records indicating courses successfully completed with sufficient identification of the course to enable the Admissions Office to locate it in the Guide to Evaluation of Educational Experience in the Armed Forces.

COURSES OF INSTRUCTION

COURSES OF INSTRUCTION

On the following pages of this CATALOGUE, under the alphabetically arranged names of the departments of instruction, are listed the courses of instruction offered by the University in the summer of 1956 and in the academic year 1956–57. The courses as here listed are subject to some slight change. The University reserves the right to withdraw any course announced.

HOURS OF INSTRUCTION

Courses of instruction are scheduled in the morning, afternoon, and evening. Evening classes are identical with daytime sections of corresponding courses, are taught by the same instructors, and carry the same amount of credit. By taking the evening and summer classes and extending the time of study beyond the customary four years, a student who is able to give only part of his time to college work may complete a regular curriculum and obtain a degree.

EXPLANATION OF COURSE NUMBERS

In the departments of the School of Medicine, first-year courses are numbered from 101 to 200; second-year courses, from 201 to 300; third-year courses, from 301 to 400; and fourth-year courses, from 401 to 500. This includes courses open to both medical and nonmedical students. Courses limited to nonmedical students follow the numbering system used in "all other schools and colleges" (see below).

In the Law School, first-year courses are numbered from 101 to 200; second-year courses, from 201 to 300; third-year courses, from 301 to 400; and graduate courses, from 401 to 500.

In all other schools and colleges the following system of numbering is used:

First-group courses.—Courses numbered from 1 to 100 are planned for students in the freshman and sophomore years. With the approval of the adviser and the dean, they may also be taken by juniors and seniors. In certain instances, they may be taken by graduate students to make up undergraduate deficiencies or as prerequisite to advanced courses, but they may not be credited toward a higher degree.

Second-group courses.—Courses numbered from 101 to 200 are planned for students in the junior and senior years. They may be credited toward higher degrees only when registration for graduate credit has been approved at the beginning of the course by the dean responsible for the graduate work and by the officer of instruction, and when the completion of additional work has been certified by the officer of instruction.

Third-group courses.—Courses numbered from 201 to 300 are planned primarily for graduate students. They are open, with the approval of the officer of instruction, to qualified seniors; they are not open to Junior College students or other undergraduates.

Indication of the Amount of Credit

The number of semester hours of credit given for the satisfactory completion of a course is, in most cases, indicated in parentheses after the name of the course. Thus, a year course giving three hours of credit each semester is marked (3–3), and a semester course giving three hours of credit is marked (3). A semester hour usually consists of the completion of one fifty-minute period of class work or of one laboratory period a week for one semester.

ACCOUNTING

Ralph Dale Kennedy, Ph.D., *Professor of Accounting, Executive Officer*
Orton Wells Boyd, A.M., C.P.A., *Professorial Lecturer in Accounting*
Edwin Lewis, M.B.A., *Professorial Lecturer in Accounting*
Clarence McLaughlin, B.S., LL.B., *Professorial Lecturer in Accounting*
Forest Carlyle Brimacombe, M.B.A., *Professorial Lecturer in Accounting*
Ira Ernest Steele, A.M., *Professorial Lecturer in Accounting*
James Leonard Buckler, A.M., *Professorial Lecturer in Accounting*
Harold Jerome Bobys, A.B., C.P.A., *Professorial Lecturer in Accounting*
Fred Vincent Demaret, M.S., *Professorial Lecturer in Accounting*
Frank Higginbotham, M.S., C.P.A., *Professorial Lecturer in Accounting*
Frederick Charles Kurtz, M.B.A., C.P.A., *Associate Professor of Accounting*
Wilbur Earle Benson, M.B.A., *Assistant Professor of Accounting*
Paul Robert McClenon, M.B.A., C.P.A., *Lecturer in Accounting*

Associate in Arts (Junior College—Two-year vocational curriculum in Accounting).—For curriculum, see pages 71–72.

Bachelor of Arts and *Master of Arts in Government with a major in Accounting (School of Government).*—See pages 65–66, 70; 187–88, 190; and 192–94, 195.

First Group

1–2 *Introductory Accounting* (3–3) — The Staff

First half: fall—morning and evening; spring—morning and evening; summer 1956. *Second half:* fall—morning and evening; spring—morning and evening; summer 1956.

Basic principles and procedures underlying accounting records used by single proprietorships, partnerships, and corporations; preparation of the work sheet and financial statements; introduction to cost accounting, analysis of financial statements and valuation and income determination problems. Prerequisite to Accounting 2: Accounting 1 or permission of the instructor.

3 *General Accounting* (3) — Kennedy

Not offered 1956–57.

Accounting theory and practice with emphasis on terminology and the analysis and interpretation of accounting data. Designed for those who need only a survey of accounting.

Second Group

101 *Cost Accounting* (3) — _____

Fall—evening; summer 1956.

Theory and purposes of industrial cost accounting; treatment of systems of cost control and determination; analysis and interpretation of cost data. Prerequisite: Accounting 1–2.

111 *Financial Statement Analysis* (3) Benson, Steele

Fall—morning; spring—evening; summer 1956.

Methods and techniques of preparing, analyzing, and interpreting financial statements for the guidance of operating executives, directors, stockholders, and creditors; influence of price level changes on accounting data; determination and interpretation of trends and ratios.

121–22 *Intermediate Accounting* (3–3) Kurtz

Academic year—morning and evening.

Valuation and income determination problems; treatment of depreciation, funds, and reserves; accounting for the organization, financing, operation, and dissolution of partnerships and corporations. Prerequisite: Accounting 1–2. Prerequisite to 122: Accounting 121.

132 *Accounting Theory* (3) Benson

Spring—morning; summer 1956.

Development of basic accounting principles and concepts with special reference to current thought expressed by the American Institute of Accountants and the American Accounting Association. Prerequisite: 6 hours of accounting.

141 *Governmental Accounting* (3) Lewis

Fall—evening.

Problems relating to governmental appropriation accounts, encumbrances, and fund accounting. Emphasis on municipal and state government accounting with an introduction to federal accounting. Prerequisite: Accounting 1–2 or permission of the instructor.

142 *Federal Accounting* (3) Lewis

Spring—evening.

Accounting problems and reports of the Federal Government. Prerequisite: Accounting 141 or permission of the instructor.

151 *Governmental Budgeting—Formulation and Adoption* (3) Buckler

Fall—evening.

Development of budgetary theory and current techniques, procedures, and problems relating to the formulation and adoption of municipal, state, and federal government budgets.

152 *Governmental Budgeting—Administration* (3) Buckler

Spring—evening.

Theory, practices, procedures, and problems involved in the evaluation and administration of budgeted programs for municipal, state, and federal governments. Prerequisite: Accounting 151 or permission of the instructor.

161 *Income Tax Accounting* (3) Kurtz, Boyd, McLaughlin

Fall—morning and evening.

Problems involved in the federal income taxation of individuals and corporations; differences between tax accounting and financial accounting; social security taxes. Prerequisite: Accounting 1–2.

162 *Federal Tax Practice* (3) Boyd, McLaughlin

Spring—evening.

Advanced problems of federal tax practice such as the tax treatment of partnerships, estates, trusts, corporate reorganizations, foreign income, gifts. Use of the tax services. Assessment, collection, and refund procedures. Prerequisite: Accounting 161 or the permission of the instructor.

171 *Auditing* (3) Higginbotham

Fall—evening; spring—morning; summer 1956.

Duties and responsibilities of auditors; principles and procedures of making audits; techniques of verifying each financial statement item; preparation of audit working papers and reports. Prerequisite: Accounting 121–22.

181 *Accounting Systems* (3) Demaret

Fall—evening.

Theory and procedure of designing and installing accounting systems for collecting, recording, analyzing, and presenting accounting data. Prerequisite: Accounting 101 and 121–22, or permission of the instructor.

191 *Advanced Accounting* (3) Kurtz

Fall—evening.

Consolidated statements, statement of affairs, realization and liquidation reports, and estate and trust accounting. Prerequisite: Accounting 121–22.

193 *Business Budgeting* (3) Benson

Fall—morning; spring—evening; summer 1956.

Principles, techniques, and procedures involved in the development, installation, and operation of a system of budgetary control to aid in the management of commercial and industrial organizations. Prerequisite: Accounting 1–2.

194 *Business Budgeting—Practice and Problems* (3) Buckler

Not offered 1956–57.

Practical application of budget principles and techniques; advanced problems involved in general budgetary administration for management control purposes in commercial and industrial business. Prerequisite: Accounting 193 or permission of the instructor.

198 *Professional Accounting Review* (3) Kurtz

Spring—evening.

Review and coordination of the principles and techniques developed in the accounting curriculum, in preparation both for general practice in the field of accountancy and for professional accounting examinations. Prerequisite: Accounting 101, 141, 162, 171, and 191, or permission of the instructor.

THIRD GROUP

202 *Advanced Cost Accounting* (3) _____

Spring—evening.

Advanced cost accounting theory and problems with emphasis on development and analysis of standard costs, the use of cost data for managerial control, and distribution cost accounting. Prerequisite: Accounting 101 or permission of the instructor.

212 *Managerial Accounting* (3) Kennedy

Spring—evening; summer 1956.

Accounting system with special reference to the use of financial and operating records as a tool of management; emphasis on managerial internal accounting control, accounting reports, and the use of budgets and cost data in directing and controlling business. Prerequisite: 9 hours of accounting or permission of the instructor.

231 *Contemporary Accounting Theory* (3) Kennedy

Fall—evening.

Advanced accounting principles and concepts and recent theories concerned with the valuation of assets and determination of income. Admission by permission of the instructor.

246 *Governmental Accounting and Budgeting Problems* (3) Lewis

Not offered 1956–57.

Advanced principles and practices in federal accounting relationship to general policy and administration. Prerequisite: Accounting 142 and 152, or permission of the instructor.

272 *Auditing Practice* (3) Higginbotham

Spring—evening.

Preparation of audit reports, accounting statements to be filed with Securities and Exchange Commission, current developments of auditing standards and practice. Prerequisite: Accounting 171 or permission of the instructor.

275 *Internal Control and Auditing* (3) Bobys

Fall—evening.

Internal accounting controls; review and appraisal of accounting systems and procedures; managerial policies with respect to their effectiveness and profitableness. Emphasis on the use of internal control and auditing as an aid to management. Prerequisite: Accounting 171 or permission of the instructor.

295–96 *Seminar in Accounting* (3–3) Kennedy

Not offered 1956–57.

Selected accounting research topics and problems; individual oral and written reports. Admission by permission of the instructor.

299–300 *Thesis* (3–3) The Staff

Academic year—as arranged; summer 1956.

Courses Offered in Special Programs

In addition to the regular courses announced above, the University offers the following accounting courses especially for students enrolled in the following special programs: Navy Graduate Comptrollership Program, Air Force Advanced Management Program, and Engineering Administration.

3 *General Accounting* (2)
204 *Cost Accounting* (2)
211–12 *Managerial Accounting* (3–3)
241–42 *Governmental Budgeting* (3–3)
253 *Governmental Budgeting* (3)
275 *Internal Control and Auditing* (3)

AIR SCIENCE

Carl Swyter, B.S. in E.E., Colonel, United States Air Force, *Professor of Air Science, Executive Officer*

Willard Alfred DeLano, Ed.M., Lieutenant Colonel, United States Air Force, *Assistant Professor of Air Science*

Robert Henry Mucha, M.B.A., Major, United States Air Force, *Assistant Professor of Air Science*

Harold Robert Henthorne, A.B., First Lieutenant, United States Air Force, *Assistant Professor of Air Science*

Edgar Frank Auten, Master Sergeant, United States Air Force, *Instructor in Air Science*

James Mitar Miklovich, Master Sergeant, United States Air Force, *Instructor in Air Science*

James John Quarto, Master Sergeant, United States Air Force, *Instructor in Air Science*

Gerald Cleveland Purcell, Technical Sergeant, United States Air Force, *Instructor in Air Science*

Training Certificate.—This certificate is awarded upon satisfactory completion of the basic Air Force ROTC course of instruction.

Commission in the United States Air Force Reserve.—Upon being awarded a Bachelor's degree and upon the satisfactory completion of the Air Force ROTC course of instruction prescribed by law and regulations, the graduate may be appointed Second Lieutenant, United States Air Force Reserve.

Basic Course

1–2 *Leadership Laboratory—Freshman Year* (1–1) The Staff

Academic year—afternoon.

Cadet basic airman training. Military courtesy, discipline, appearance, and bearing; squad flight, squadron, and mass formation drill; parades and ceremonies. Minimum 15 hours a semester. Dry-cleaning fee, charged one time a year, $3. (May be substituted for Physical Education 1–2.)

11–12 *Leadership Laboratory—Sophomore Year* (1–1) The Staff

Academic year—afternoon.

Cadet non-commissioned officer training. Military bearing and courtesy, all phases of drills and ceremonies, command voice training and command responsibility. Prerequisite: Air Science 1–2 and Air Science 21–22 for men and Air Science 1–2 for women. Minimum 15 hours a semester. Dry-cleaning fee, charged one time a year, $3. (May be substituted for Physical Education 11–12.)

21–22 *Air Science I—Freshman Year* (2–2) The Staff

Academic year: 2 hours a week—morning and afternoon.

Introduction to aviation, fundamentals of global geography, international tensions and security organizations, military instruments of national security.

51–52 *Air Science II—Sophomore Year* (2–2) Henthorne

Academic year: 2 hours a week—morning and afternoon.

Careers in the United States Air Force; elements of aerial warfare, targets, weapons, aircraft, bases, and operations. Prerequisite: Air Science 21–22 or equivalent active military training.

Advanced Course

101–2 *Air Science III—Junior Year* (3–3) Mucha

Academic year: 4 hours a week—morning.

The Air Force Commander and his Staff, creative problem solving, communicating in the Air Force, instructing in the Air Force, military justice, air navigation, weather, Air Force base functions. Prerequisite: Air Science 51–52 or equivalent active military training and selection by a board of University and Air Force officials.

103–4 *Leadership Laboratory—Junior Year* The Staff
(Credit is a part of Air Science 101–2)

Academic year—afternoon.

Cadet non-commissioned officer and officer training. Wearing of the uniform, parades and ceremonies, commands and command voice. Cadets perform duties involving planning for and supervision of Cadet Corps activities. Emphasis placed on leadership and management proficiency. Minimum 15 hours a semester.

105 *Summer Training Unit—Between Junior and Senior Years* (required) The Staff

Attendance at a four- to six-week Air Force ROTC summer training unit at an Air Force base within continental United States is mandatory between the junior and senior years. Program consists of familiarization flying, physical training, individual weapons, Air Force base activity and equipment, field exercises, air base problems, and leadership training. Prerequisite: Air Science 101–2.

151–52 *Air Science IV—Senior Year* (3–3) DeLano

Academic year: 4 hours a week—morning.

Leadership and management seminar; military aviation and the evolution of warfare; military aspects of world political geography; briefing for commissioned service. Prerequisite: Air Science 101–2 and Air Science 105 (Summer Training Unit).

153–54 *Leadership Laboratory—Senior Year* The Staff
(Credit is a part of Air Science 151–52)

Academic year—afternoon.

Cadet officer training. Cadet officers conduct activities of Corps of Cadets through chain of command, instruct subordinates, plan and supervise Cadet Corps training and administration. Preparation for commissioned officer duties. Development of leadership and managerial responsibilities. Minimum 15 hours per semester.

ANATOMY

Ira Rockwood Telford, Ph.D., *Professor of Anatomy, Executive Officer*
Paul Calabrisi, Ph.D., *Professor of Anatomy*
Webb Edward Haymaker, M.D., M.S., *Professorial Lecturer in Anatomy*
Gerald Fred Hungerford, Ph.D., *Assistant Professor of Anatomy*
Frank Duane Allan, Ph.D., *Assistant Professor of Anatomy*
Thomas Nick Johnson, Ph.D., *Assistant Professor of Anatomy*
Dora Papara-Nicholson, M.D., *Assistant Research Professor of Anatomy*
Wilfred Walter Eastman, B.S., M.D., *Clinical Instructor in Anatomy*
Lloyd Eugene Church, D.D.S., M.S., *Clinical Instructor in Anatomy*
Raymond Nathan Brown, M.D., *Clinical Instructor in Anatomy*
Lysle Westley Williams, A.B., M.D., *Clinical Instructor in Anatomy*
John Watt, Jr., M.D., *Clinical Instructor in Anatomy*

Master of Science in the field of Anatomy (Columbian College).—Prerequisite: a Bachelor of Arts or Bachelor of Science degree from this University, or the equivalent, with a major in Biology, Chemistry, or Zoology. The undergraduate program must include the following courses, or the equivalent: Chemistry 11–12, 21, 151–52; Physics 6, 7; Zoology 1–2, 41–42. Biochemistry 221–22 is recommended as an elective.

Required: the general requirements as stated on pages 89–92. The thirty semester hours of graduate work must include Anatomy 203, 204, 205, 221–22, 295–96, 299–300, and graduate courses in biochemistry, physiology, or related fields selected with the approval of the Department. It is not always possible to arrange courses and research so that the student can be assured of completing all the required work in one academic year.

Doctor of Philosophy (Graduate Council).—See page 96.

101–2 *Gross Anatomy* — Calabrisi and Staff

Academic year: fall—12 hours a week; spring—8½ hours a week.

Regional dissection of the human body, supplemented with lectures and quiz sections. Study of X-ray anatomy to emphasize the functional aspects of the position, shape, and relation of the viscera and skeletal components.

103 *Human Embryology* — Allan and Staff

Fall—3 hours a week.

The origin and development of the human body. Special emphasis on the value of embryology in interpreting anatomical anomalies and variations as seen in gross dissection, surgery, obstetrics, and pathology.

104 *Neuroanatomy* — Johnson and Staff

Spring—6 hours a week.

The macroscopic and microscopic study of the central nervous system

and the special sense organs. Emphasis on such dynamic aspects as development, pathways, lesions, etc.

105 *Microscopic Anatomy* — Telford and Staff

Fall—9 hours a week.

Study of the detailed minute structure of cells, tissues, and organs of the human body, with emphasis on the relation of structure to function. Recognition and interpretation of histological sections tested by practical examinations.

106 *Living Anatomy* — The Staff

Spring—1 hour a week.

An introduction to physical diagnosis, with special emphasis on topographical anatomy.

201–2 *Gross Anatomy* (8–6) — Calabrisi and Staff

Academic year—as arranged.

For qualified non-medical graduate students. Same as Anatomy 101–2. Anatomy 201—laboratory fee, $21; Anatomy 202—laboratory fee, $16.

203 *Human Embryology* (2) — Allan and Staff

Fall—as arranged.

For qualified non-medical graduate students. Same as Anatomy 103. Laboratory fee, $8.

204 *Neuroanatomy* (4) — Johnson and Staff

Spring—as arranged.

For qualified non-medical graduate students. Same as Anatomy 104. Laboratory fee, $13.

205 *Microscopic Anatomy* (4) — Telford and Staff

Fall—as arranged.

For qualified non-medical graduate students. Same as Anatomy 105. Laboratory fee, $13.

221–22 *Seminar* (1–1) — Hungerford and Staff

Academic year: 1 hour a week—as arranged.

Reports and discussions of special topics by the Staff and graduate students. For graduate liberal arts students. Regular medical students are encouraged to attend.

295–96 *Research* (arr.) — The Staff

Academic year—as arranged.

Fees to be arranged.

299–300 *Thesis* (3–3) — The Staff

ANESTHESIOLOGY

Charles Seymour Coakley, M.D., *Professor of Anesthesiology, Executive Officer*
Donald Harrison Stubbs, A.M., M.D., *Clinical Professor of Anesthesiology*
Seymour Alpert, A.B., M.D., *Associate Professor of Anesthesiology*
Cunningham Ramsey MacCordy, M.D., *Associate in Anesthesiology*
Salomon Naphtali Albert, A.B., M.D., *Clinical Instructor in Anesthesiology*
William Eldridge Bageant, M.D., *Clinical Instructor in Anesthesiology*
Allen Widome, M.D., *Clinical Instructor in Anesthesiology*
Charles Gruenwald, A.B., M.D., *Clinical Instructor in Anesthesiology*

320 *Anesthesiology* — The Staff

Spring—1 hour a week.

Review of basic sciences, correlation between basic sciences and clinical work.

421–22 *Anesthesia Seminar* — The Staff

Academic year—1 hour a week.

Students attend anesthesia seminars during their surgical clinical clerkships. University Hospital.

433–34 *Advanced Anesthesiology* — The Staff

Academic year—as arranged.

Students are rotated through the work of the department for a period of one week and assigned to work in the operating rooms and to attend conferences and seminars. For the more advanced students a three-week elective is offered.

ART

*Norris Ingersoll Crandall, M.Arch., *Professor of Art*
Donald Chenoweth Kline, B.Arch., M.F.A., *Professor of Art, Executive Officer*
Grose Evans, B.F.A., Ph.D., *Professorial Lecturer in Art*
————————, *Assistant Professor of Art*

STAFF IN THE CORCORAN SCHOOL OF ART

DRAWING AND PAINTING: Richard Lahey, Principal; Edmund Archer, Jessalee Sickman, John Lewis
SCULPTURE AND CARVING: Heinz Warneke
COMMERCIAL ART: Edward Forrest Walton

Bachelor of Arts (Columbian College)—Departmental:

The major in Art History and Theory.—Prerequisite: the Arts and Letters curriculum in the Junior College, or the equivalent, including Art 11–12 and six hours elected from the following: 45–46, 65–66, 71–72.

Required, in addition to the general requirements stated on pages 82–87, thirty semester hours in Art, which must include Art 101, 102, 105, 106, 109 or 110, 161–62; nine hours chosen from Art 127–28, 141, 142, 143, 146.

The major in Drawing, Painting, Sculpture and Commercial Art.—Prerequisite: the Arts and Letters curriculum in the Junior College, or the equivalent, including 6 hours chosen from Art 11–12, 45–46, 65–66, 71–72.

Required: in addition to the general requirements stated on pages 82–87, twenty-four hours of drawing and painting, sculpture, or commercial art; and twelve hours of Art History chosen from 101, 102, 105, 106, 109, 110, 143, 146, 161–62. Classes in drawing and painting, sculpture, and commercial art are held at the Corcoran School of Art.

Bachelor of Art in Education with a teaching field in Art (School of Education).—Prerequisite: the Education curriculum, page 68.

Required: the Art option, pages 165–66 and professional courses listed on page 72.

FIRST GROUP

11–12 *Art Appreciation* (3–3)

Academic year—morning and evening.

A consideration of the vocabulary, methods, and materials of creative expression in the fine arts. A study of the language and function of art in its various media, the development of styles, aesthetic principles, theories, and ideals in art through the ages.

45–46 *Drawing and Painting I—Life and Still Life* (6–6) Sickman

Academic year—morning and afternoon.

* On leave of absence fall semester 1956–57.

65–66 *Drawing and Painting I—Life, Still Life, and Portrait* (3–3) — The Staff

Academic year—morning and afternoon.

67–68 *Drawing and Painting I—Life and Portrait* (6–6) — Archer

Academic year—morning, afternoon, and evening.

71–72 *Introduction to the Arts in America* (3–3) — Kline

Academic year—morning and evening; summer 1956.

Painting, sculpture, architecture, furniture, and the popular arts from the colonial beginnings to the present.

81–82 *Sculpture I* (6–6) — Warneke

Academic year—afternoon and evening.

Modeling and composition in clay.

Second Group

101 *Ancient Art* (3) — Kline

Fall—afternoon.

The development of the forms of architecture, sculpture, painting, and the minor art in the Ancient civilizations of Egypt, Mesopotamia, Greece, and Rome.

102 *Medieval Art* (3) — Kline

Spring—afternoon.

A study of the architecture, sculpture, and painting from the formative stages of Christian Art in the Byzantine Age through the Romanesque and Gothic periods.

105 *Renaissance Art in Italy* (3) — _____

Fall—morning.

The development of painting, sculpture, and architecture in fifteenth and sixteenth century Italy.

106 *Renaissance Art in the North* (3) — _____

Spring—afternoon.

A study of the painting, graphic arts, and major architectural developments in England, France, the Netherlands, Germany, and Spain, during the sixteenth, seventeenth, and eighteenth centuries.

109 *Nineteenth Century Art in Europe* (3) — _____

Fall—afternoon. (Formerly Art 151.)

The development of European painting and sculpture from Neoclassicism and Romanticism through Impressionism.

110 *Contemporary Art* (3)

Spring—afternoon. (Formerly Art 152.)

A study of sculpture and painting from Post Impressionism through the later modern movements to the present.

125–26 *Drawing and Painting II—Life, Still Life, and Portrait* (6–6) Sickman

Academic year—morning and afternoon.

127–28 *Drawing and Painting II—Life and Portrait* (6–6) Archer

Academic year—morning, afternoon, and evening.

135–36 *Drawing and Painting II—Life and Portrait* (6–6) Archer

Academic year—morning, afternoon, and evening.

141 *Interior Decoration* (3) Kline

1956–57 and alternate years: fall—afternoon.

A study of the principles of decoration dealing with furniture design and ensemble layout, draperies, color, accessories, and lighting.

142 *House Planning* (3) Kline

1956–57 and alternate years: spring—afternoon.

Study of the contemporary house for family living, including site problems, the case plan, materials of building, and climate conditioning.

143 *Primitive Art* (3) Kline

1957–58 and alternate years.

The arts of pre-historic and primitive man in the pre-Columbian Americas, Oceania, and Africa.

146 *Art of the Far East* (3) Kline

1957–58 and alternate years.

The architecture, painting, and sculpture of China and Japan.

161–62 *Theory and Criticism* (3–3) Evans

Academic year—evening.

The artist on art and the history of art criticism.

165–66 *Drawing and Painting II—Life and Portrait* (6–6) — Lahey, Lewis

Academic year—morning, afternoon, and evening.

175–76 *Drawing and Painting II—Life and Portrait* (6–6) — Lewis

Academic year—afternoon.

179–80 *Sculpture II* (6–6) — Warneke

Academic year—afternoon and evening.

Portrait-life modeling and composition in clay, plaster and wood carving.

181–82 *Design and Commercial Art* (3–3) — The Staff

Academic year—afternoon.

183–84 *Commercial Art* (6–6) — Walton

Academic year—afternoon and evening.

Perspective drawing; scaling; drawing of furniture, merchandise, and fashion; lettering and typography; layout; rendering techniques; production methods.

185–86 *Advanced Commercial Art* (6–6) — Walton

Academic year—afternoon and evening.

Layout and illustrative projects in advertising campaigns; reproduction methods in black and white, half-tone mediums, and color; work portfolios.

BACTERIOLOGY, HYGIENE, AND PREVENTIVE MEDICINE

Leland Wilbur Parr, Ph.D., *Professor of Bacteriology, Executive Officer*
Angus MacIvor Griffin, Ph.D., *Professor of Bacteriology*
Ralph Gregory Beachley, M.D., Dr.P.H., *Adjunct Professor of Public Health Practice*
Mary Louise Robbins, Ph.D., *Associate Professor of Bacteriology*
William Gray McCarten, M.S., *Assistant Professor of Bacteriology*
Rudolph Hugh, Ph.D., *Assistant Research Professor of Bacteriology*
Charles Francis McCaffrey, M.D., *Clinical Instructor in Preventive Medicine and Public Health*

Special Lecturers

Chester Wilson Emmons, Ph.D., *Chief, Medical Mycology Unit, Laboratory of Infectious Diseases, National Microbiological Institute, National Institutes of Health;* Medical Mycology
Willard Hull Wright, D.V.M., Ph.D., *Chief, Laboratory of Tropical Diseases, National Microbiological Institute, National Institutes of Health;* Medical Zoology
John Roderick Heller, Jr., B.S., M.D., *Director, National Cancer Institute, National Institutes of Health;* Cancer Control
Robert Carter Cook, *Director, Population Reference Bureau; Editor, Journal of Heredity;* Medical Genetics
Robert Hanna Felix, M.D., M.P.H., *Director, National Institute of Mental Health, National Institutes of Health;* Mental Hygiene
Francis Byron Gordon, Ph.D., M.D., *Head, Virology Division, Naval Medical Research Institute, Naval Medical Center;* Virology
Edward Kramer Funkhouser, B.S., *Executive Secretary, District of Columbia Tuberculosis Association;* Community Health Resources
Samuel Jacob Ajl, Ph.D., *Chief, Microbiological Chemistry, Department of Bacteriology, Army Medical Service Graduate School:* Microbiological Chemistry
Sarah Bishop Brooks, R.N., B.S. in P.H.N., *Director, Division of Public Health Nursing, Arlington County Health Department;* Public Health Practice
Martin Marc Cummings, B.S., M.D., *Chief, Research and Education Service, Department of Medicine and Surgery, Veterans Administration;* Medical Bacteriology

Morris Cecil Leikind, M.S., *Chief, Historical Research Division, Medical Museum, Armed Forces Institute of Pathology;* History of Microbiology

Master of Arts or *Master of Science in the field of Bacteriology (Columbian College).*—Prerequisite: a Bachelor of Arts or a Bachelor of Science degree, respectively, from this University, or the equivalent, with a major in Bacteriology, Botany, Chemistry, or Zoology. The undergraduate program must include the following courses or the equivalent: Chemistry 11–12, 21, 151–52; Physics 6, 7; Zoology 1–2, 41–42.

Required: the general requirements as stated on pages 89–92. The thirty semester hours must include Bacteriology 209, 210, 293–94, 295–96, 299–300. The remaining courses are to be selected from Bacteriology 219–20, 230, 232, 234, 240 and Biochemistry 221–22 (if not presented for admission). The student with much bacteriological background may substitute for credit one course from the following: cytology, genetics, cell physiology, entomology, histology, biostatistics, and protozoa. It is not always possible to arrange courses and research so that the student can be assured of completing all required work in one academic year.

Doctor of Philosophy (Graduate Council).—See page 96.

112 *General Bacteriology* (4) Robbins

Spring—Mon., Wed., and Fri., 9:10 to 12:00 A.M.

For nonmedical students. A study of the fundamentals of bacteriology, including hygienic applications. Methods of cultivation and control of several groups of microorganisms are studied in the laboratory. Prerequisite: any biological laboratory science; Chemistry 11–12. Laboratory fee, $13.

209 *Medical Microbiology* (1–11) Parr, Griffin

Fall: lecture (4 hours), laboratory (10 hours)—as arranged.

Bacteria, rickettsia, viruses, yeasts, molds, protozoa, and metazoa which relate to the health and diseases of man—cultural study of most important forms; methods of diagnosis by microscopic, cultural, immunologic, and animal reactions; theory and methods of immunology; vaccines; serums; antibiotics. Open to suitably prepared graduate students; may be elected as a whole or in part by adding the appropriate letter to the course number, with credit allocated as follows: (a) *Bacteriology*, including rickettsia and viruses—lecture (4), laboratory (3); (b) *Parasitology*, including medical mycology—lecture (2), laboratory (1); (c) *Immunology* (1). May be taken by a limited number of candidates for Master's degrees. Laboratory fee, $4.50 for each semester hour of laboratory work.

210 *Fundamentals of Epidemiology and Public Health* (2) Parr and Staff

Spring—Mon., 2:00 to 4:00 P.M.

Sources, modes, and implications of infection and injury. Consideration also given the problems of accidents and industrial medicine. Open to liberal arts graduate students. Prerequisite: Bacteriology 112 or 209.

219–20 *Advanced Microbiology* (arr.) Griffin and Staff

Academic year—as arranged.

Special study of advanced methods and current problems in microbiology for suitably qualified students specializing in microbiology. Prerequisite: Bacteriology 112 or 209; Chemistry 151–52 or the equivalent; permission of the instructor. Laboratory fee, $4.50 a semester hour.

230 *Statistics in Microbiology* (3) Griffin

1957–58 and alternate years.

The application of statistical methods to the problems of microbiology. For liberal arts graduate students. Prerequisite: entrance or elementary college algebra.

232 *Immunological Methods* (3) McCarten

1956–57 and alternate years: spring—as arranged.

Preparation and testing of serological materials. Demonstration of basic serological phenomena. For liberal arts graduate students. Prerequisite: Bacteriology 112 or 209 and permission of the instructor. Laboratory fee, $11.

234 *Virology* (6) Robbins

1957–58 and alternate years.

Study of viruses and rickettsiae. Lectures and laboratory exercises. For liberal arts graduate students. Prerequisite: Bacteriology 112 or 209 and permission of the instructor. Laboratory fee, $16.

240 *Advanced Epidemiology and Public Health* (3) Parr

1957–58 and alternate years.

Conferences, readings, and problems for graduate students dealing with specialized and advanced phases of the topics presented in Bacteriology 210. Prerequisite: Bacteriology 210.

293–94 *Staff Seminar* (1–1) The Staff

Academic year—as arranged.

For liberal arts graduate students. Bi-weekly throughout the year.

295–96 *Research in Bacteriology* (arr.) The Staff

Academic year—as arranged.

299–300 *Thesis* (3–3) The Staff

340 *Health Resources Survey* Beachley and Staff

Spring—1 hour a week for 3 weeks; summer 1956—independent study.

A survey of complete medical care from first contact, through lab-

oratory and clinical diagnosis, adequate medical or surgical treatment to full family and community rehabilitation. Case histories assigned junior students with the cooperation and assistance of the clinical departments. Comparison is to be made between care in near-ideal facilities and care in facilities where the student might begin his practice. Emphasis is on coordination of the private practice of medicine and community public health and welfare activities, both tax supported and voluntary. Throughout the holistic point of view is assumed.

401 *Public Health Practice* **Beachley and Staff**

Fall—1 hour a week for 5 weeks.

Study of public health practice at national, state, city, and county levels. Public and private agencies.

BIOCHEMISTRY

Joseph Hyram Roe, Ph.D., *Professor of Biochemistry, Executive Officer*
Carleton Raymond Treadwell, Ph.D., *Professor of Biochemistry*
Bernard Leonard Horecker, Ph.D., *Professorial Lecturer on Enzymes*
William Robert Carroll, Ph.D., *Professorial Lecturer on Proteins*
Irving Gray, Ph.D., *Professorial Lecturer on Isotopes*
Benjamin Williams Smith, Ph.D., *Assistant Professor of Biochemistry*
Klaus Schwarz, M.D., *Associate in Biochemistry*
Harold William Clark, Jr., Ph.D., *Associate in Biochemistry*

Master of Arts* or *Master of Science in the field of Biochemistry (Columbian College).—Prerequisite: a Bachelor of Arts or a Bachelor of Science degree. The undergraduate program must have included the following courses, or the equivalent: Chemistry 11–12, 21, 22, 151–52; Physics 6 and 7; Zoology 1–2 or Biology 1–2.

Required: the general requirements as stated on pages 89–92. The thirty semester hours must include Biochemistry 221–22, 225–26, 227–28, 299–300. The remaining courses are to be selected from Biochemistry 224, 232, 242, 251, 261, 295–96, or, with the approval of the adviser, from graduate courses in Bacteriology, Chemistry, Physiology, or Pharmacology. It is usually not possible to arrange courses and research so that the student can be assured of completing all of the required work in one academic year.

Doctor of Philosophy (Graduate Council).—See page 96.

113-14 *Biochemistry* — Roe and Staff

Academic year: lecture (2 hours), conference (1 hour), laboratory (6 hours)—as arranged.

Physiological and clinical chemistry. For medical students.

221-22 *Biochemistry* (4–4) — Treadwell

Academic year—Tues. and Thurs., 9:00 to 12:00 A.M. and 1:00 to 2:00 P.M.

A lecture and laboratory course for nonmedical students. Prerequisite: Chemistry 22 and 152. Material fee, $15 a semester.

224 *Biochemistry of the Enzymes* (1) — Horecker

Spring—Mon., 5:00 P.M.

Lecture course dealing with the biochemistry of the enzymes and enzyme reactions. Prerequisite: Biochemistry 113 or 221.

225-26 *Biochemical Procedures* (3–3) — Smith, ———

Academic year—as arranged.

A laboratory course. Material fee, $16 a semester.

227–28 *Biochemistry Seminar* (1–1) Roe

Academic year—Fri., 4:00 P.M.

The current literature in the field of biochemistry, mainly for graduate students, but open to a limited number of specially qualified medical students.

232 *Proteins and Amino Acids* (1) Carroll

Spring—Wed., 5:00 P.M.

A lecture course. Prerequisite: Biochemistry 113 or 221.

242 *Isotopes* (1) Gray

Spring—Sat., 9:00 A.M.

A lecture course. Prerequisite: Biochemistry 113 or 221.

251 *Carbohydrate Metabolism* (1) Roe

Fall—Sat., 9:00 A.M.

A lecture course. Prerequisite: Biochemistry 114 or 222

261 *Biochemistry of the Lipids* (1) Treadwell

1957–58 and alternate years.

A lecture course. Prerequisite: Biochemistry 114 or 222.

295–96 *Research in Biochemistry* (arr.) Roe, Treadwell

Academic year—as arranged.

299–300 *Thesis* (3–3) Roe, Treadwell

BIOLOGY*

Paul William Bowman, Ph.D., *Professor of Biology, Executive Officer*
Sam Clark Munson, Ph.D., *Associate Professor of Biology*
Robert Carter Cook, *Professorial Lecturer on Genetics*

Bachelor of Arts or *Bachelor of Science with a major in Biology (Columbian College—Field-of-Study).*—Prerequisite: the Arts and Letters or the Science curriculum, respectively, in the Junior College, see pages 66 and 67.

Required: the general requirements as stated on pages 82–87 and the grade of "pass" on the Biology major examination at the end of the senior year. The coordinated field of knowledge upon which the student will be examined includes the classification and life histories of plants and animals, ecology, geology, evolution, heredity, the physical and cultural development of man, public health problems, and the history of biology. The course offerings will be correlated and supplemented by supervised study in a proseminar. For further details, see the pamphlet, which is available at the Office of the Dean of Columbian College.

Master of Arts or *Master of Science in the field of Biology (Columbian College).*—Prerequisite: a Bachelor of Arts or Bachelor of Science degree, respectively, with a major in Biology at this University, or the equivalent.

Required: the general requirements as stated on pages 89–92.

Bachelor of Arts in Education with a teaching field in Biology (School of Education).—Prerequisite: the Education curriculum, page 68.

Required: the Biology option, page 166, and the professional courses listed on page 172.

Doctor of Philosophy (Graduate Council).—See page 96.

First Group

1–2 *Survey in Biology* (3–3) Munson

Academic year—morning, afternoon, and evening; summer 1956.

Systematic study of the plant and animal kingdoms, with emphasis upon the interdependence of living things and their relations with their environments. Introduction to evolution, heredity, public health, and conservation. Material fee, $7 a semester. Lecture, laboratory, and field trip to nearby countryside, museums, and other places of biological interest.

Second Group

107 *Organic Evolution* (3) Bowman

1956–57 and alternate years: fall—morning; 1957–58 and alternate years: fall—evening.

A study of the theories explaining organic evolution and a review of the kinds of evidence cited in support of these theories.

* See also departments of Botany and Zoology.

115–16 *Cytology* (3–3) Bowman

Academic year: lecture, recitation, and laboratory—evening.

Plant and animal cells and their components, including the chromosomes and their role in heredity, with training in the preparation of materials for study. Prerequisite: one year of college work in biology, botany, or zoology. Material fee, $8 a semester.

127 *Genetics* (3) Cook

Not offered 1956–57.

A lecture course in which the general principles are illustrated with specific examples of inheritance in plants and animals, including man. Prerequisite: one year of college work in biology, botany, or zoology.

139 *Cell Physiology* (3)

Not offered 1956–57.

The fundamental physiology of protoplasm. Prerequisite: Chemistry 12 and one year of college biology, botany, or zoology.

199–200 *Proseminar in Biology* (3–3) Bowman

Academic year—morning.

Individually planned and directed study by means of which majors in biology may correlate and supplement the subject matter presented in various regular courses.

Third Group

201–2 *Seminar: Cytology* (3–3) Bowman

Academic year—evening.

211–12 *Research in Cytology* (arr.) Bowman

Academic year—as arranged; summer 1956—Biology 212 (arr.).

299–300 *Thesis* (3–3) Bowman

Academic year—as arranged; summer 1956.

BOTANY*

Lyman Bradford Smith, Ph.D., *Professorial Lecturer on Taxonomy*
John Gilbert Palmer, Ph.D., *Assistant Professor of Botany, Executive Officer*
————————, *Assistant Professor of Botany*

Bachelor of Arts or *Bachelor of Science with a major in Botany (Columbian College—Departmental).*—Prerequisite: the Arts and Letters or the Science curriculum, respectively, in the Junior College, see pages 66 and 67.

Required, in addition to the general requirements as stated on pages 82–87, a minimum of twenty-four semester hours in Botany beyond the introductory courses, with collaterals as recommended in conference.

Master of Arts or *Master of Science in the field of Botany (Columbian College).*—Prerequisite: the equivalent of a Bachelor of Arts or Bachelor of Science degree, respectively, from this University with a major in Botany.

Required, the general requirements as stated on pages 89–92.

Doctor of Philosophy (Graduate Council).—See page 97.

First Group

1 *Structure and Functions of the Flowering Plant*† (3) ————————, Palmer

Lecture (2 hours), laboratory (2 hours).
Fall—morning, afternoon, and evening; spring: lecture—morning, laboratory—afternoon; summer 1956.

The typical plant as a working mechanism, with the emphasis on biological significance of plant physiology. Material fee, $7.

2 *Survey of the Plant Kingdom*† (3) ————————, Palmer

Spring: lecture (2 hours), laboratory (2 hours)—morning, afternoon, and evening; summer 1956.

Study of the different kinds of plants, with emphasis on the evolution of the plant kingdom; practice in identifying flowering plants. Material fee, $7.

Second Group

105 *Field Botany* (3) Palmer

1957–58 and alternate years.

Field trips to neighboring localities of botanical interest, with classroom study. Prerequisite: Botany 1 and 2 or Biology 1–2. Lecture (1 hour); laboratory (2 hours); field trips (3 hours).

* See also the Departments of Biology, Geography, and Zoology.
† Before completing registration, each student must obtain from the representative of the Department an assignment to a laboratory section.

107 *Algae, Fungi, and Mosses* (3) ———

Fall—evening.

Field and laboratory study of the habitat, structure, and identification of representative local forms of algae, fungi, and mosses. Prerequisite: Botany 1 and 2 or Biology 1–2.

109 *Plant Morphology* (3) Palmer

Not offered 1956–57.

Survey of structure of root, stem, leaf, and flower of seed plants; followed by the application to several of the economically important families. Prerequisite: Botany 1 and 2 or Biology 1–2. Lecture (2 hours); laboratory (2 hours).

116 *Plant Growth* (3) Palmer

Not offered 1956–57.

The functions of plants with special emphasis on the practical problems of growing and of caring for plants. Prerequisite: Botany 1 or Biology 1. Lecture (2 hours); laboratory (2 hours).

118 *Physiology of Bacteria and Fungi* (3)

1957–58 and alternate years.

Lectures, literature reviews, and laboratory studies of the physiology of bacteria and fungi. Prerequisite: Botany 1 and 2 or Biology 1–2.

125–26 *Plant Taxonomy* (3–3) Palmer

1957–58 and alternate years.

A study of the characteristics, phylogeny, and economics of selected families of the flowering plants. Field collection and identification. Prerequisite: Botany 1 and 2 or Biology 1–2. Material fee, $7 a semester. Lecture (1 hour); laboratory and field (4 hours).

131–32 *Mycology* (3–3) Palmer

Academic year: lecture (1 hour), laboratory (4 hours)—evening.

133–34 *Plant Pathology* (3–3) Palmer

Not offered 1956–57.

Material fee, $8 a semester.

135–36 *Plant Physiology* (3–3) ———

Academic year—evening.

First half: mineral and water relations of plants; *second half:* organic syntheses and growth. Prerequisite: Chemistry 11–12. Material fee, $8 a semester.

141–42 *Plant Ecology* (3–3)

1957–58 and alternate years: lecture (2 hours), laboratory (2 hours).

143 *Introduction to Plant Geography* (3)

1957–58 and alternate years.

A study of the basic principles and methods of plant geography. Prerequisite: Botany 1 and 2 or Biology 1–2.

144 *The Vegetation of North America* (3)

1957–58 and alternate years.

Lectures, seminars, and laboratory on the characteristic vegetations of North America with emphasis on the United States. Prerequisite: Botany 1 and 2 or Biology 1–2.

161 *Soils* (3)

1957–58 and alternate years.

Composition, characteristics, geographic distribution, and uses of soils. (For students interested in plant distribution, ecology, and soils, Geography 128, *Economic Geography: Agriculture;* 131, *Conservation of Natural Resources;* and 132, *Land Use* are recommended as electives.)

THIRD GROUP

221–22 *Seminar: Taxonomy* (3–3) Smith

Not offered 1956–57.

235–36 *Seminar: Physiology* (3–3)

Not offered 1956–57.

241–42 *Seminar: Ecology* (3–3)

Not offered 1956–57.

295–96 *Research* (arr.) The Staff

Academic year—as arranged; summer 1956—Botany 295 (arr.). Fee to be arranged.

299–300 *Thesis* (3–3) The Staff

Academic year—as arranged; summer 1956—Botany 299 (3).

BUSINESS AND PUBLIC ADMINISTRATION

Richard Norman Owens, Ph.D., C.P.A., *Professor of Business Administration*
Harold Griffith Sutton, M.S., *Professor of Finance*
Arlin Rex Johnson, Ph.D., *Professor of Business Administration*
Joe Lee Jessup, M.B.A., *Professor of Business Administration*
James Carleton Dockeray, Ph.D., *Professor of Finance, Executive Officer*
Montell Ernest Ogdon, Ph.D., *Professorial Lecturer in Business Administration*
Karl Ernest Stromsem, Ph.D., *Professorial Lecturer in Public Administration*
Joseph Leo Krieger, M.B.A., *Professorial Lecturer in Business Administration*
Carl William Clewlow, A.M., *Professorial Lecturer in Business Administration*
Eugene Fields, B.S., C.P.C.U., *Professorial Lecturer on Insurance*
William George Torpey, Ph.D., *Professorial Lecturer in Public Administration*
Reuben Horchow, M.B.A., LL.B., *Professorial Lecturer in Business Administration*
Joseph Novak Stonesifer, A.M., *Professorial Lecturer in Business Administration*
Gordon Gouverneur Barnewall, Ph.D., *Associate Professor of Business Administration*
David Springer Brown, Ph.D., *Associate Professor of Public Administration*
Frederick Timberlake, M.B.A., *Instructor in Business Administration*
Robert Kaye, A.M., *Lecturer in Business Administration*
Joseph Patrick Murphy, A.B., LL.B., LL.M., *Lecturer on Commercial Law*
William Williams Edwards, A.M., *Lecturer in Business Administration*
Roy Brandon Eastin, Ph.D., *Lecturer in Public Administration*
Irving Samuel Schwartz, A.M., *Lecturer in Public Administration*
Eric Theodore Hagberg, A.M., *Lecturer in Public Administration*
John Provan, M.S., *Lecturer in Public Administration*

Bachelor of Arts in Government with a major in Business Administration (School of Government).—For curricula see pages 70, 187–88, 189–92.

Master of Business Administration (School of Government).—Prerequisite: an acceptable undergraduate major in Business Administration or the equivalent. Required: the general requirements for the degree as stated on pages 192–94.

Master of Arts in Public Administration (School of Government).—For curriculum see pages 196–97.

Master of Arts in Personnel Administration (School of Government).—For curricula see pages 197–98.

Doctor of Business Administration (School of Government).—Prerequisite: a Master's degree in Business Administration or a related field, or the equivalent, and proficiency in Statistics and Accounting to the satisfaction of the Committee on Doctoral Studies.

Required: thirty hours of graduate work beyond the Master's level, the passing of a general examination in three fields, and the writing and defending of a dissertation. See pages 198–99.

Bachelor of Science in Engineering with an option in Business Administration (School of Engineering).—See pages 138–41 and 143–44.

Bachelor of Arts in Education with teaching fields in Business Education (School of Education).—Prerequisite: the Education curriculum page 68.

Required: the Business Education option, pages 166–67, and the professional courses listed on page 172.

BUSINESS ADMINISTRATION

Second Group

101 *Business Organization and Combination* (3) Timberlake

Fall—evening; spring—evening; summer 1956.

Simple and interrelated forms of business enterprise and their control by government.

102 *Business Management* (3) Timberlake

Fall—morning; spring—morning and evening; summer 1956.

The management movement, organization of an enterprise, principles of management and their application to various departments of an enterprise.

105 *Personnel Management in Industry* (3) Stonesifer

Fall—morning; spring—evening; summer 1956.

Organization and work of the personnel department, human relations in business.

106 *Problems in Personnel Management* (3) Owens

Fall—evening; spring—morning.

Principles of human relations illustrated by cases drawn from business and industry. Prerequisite: Business Administration 105.

109 *Office Management* (3) Horchow

Fall—evening; spring—evening; summer 1956.

Organization and layout of an office, use of office machines and appliances, planning and execution of work, supervision problems.

113 *Real Estate* (3)

Fall—evening.

Fundamentals of real estate practice; leasing and property management; valuation, financing, and taxation.

116 *Urban Transportation* (3)

Not offered 1956–57.

Local transportation in economic development; regulation, finance, operation, and management of transit services; community planning for streets, highways, parking, and traffic control.

121 *General Insurance* (3)

Spring—evening.

A general course in underlying principles of property, life, marine, and casualty insurance, and the function of insurance in the economic life of a business or individual. Prerequisite: Economics 1–2.

123–24 *Property and Casualty Insurance A and B* (2–2) Fields

Academic year—evening.

The principles and practices of property and casualty insurance with emphasis on the economics of insurance, types of carriers, contract provisions, agency and brokerage, and state regulation and supervision.

125–26 *Property and Casualty Insurance C and D* (2–2)

Not offered 1956–57.

The principles and practices of property and casualty insurance with emphasis on theory of probability, rates and rating, reserves, financial statements, and investments; loss adjustment and loss prevention. Prequisite: Business Administration 123–24.

127–28 *Property and Casualty Insurance E and F* (2–2) Fields

Not offered 1956–57.

Principles of accounting; principles of business and personal finance; business organization and agency management.

129–30 *Property and Casualty Insurance G and H* (2–2) Fields

Academic year—evening.

Insurance law with particular attention given to construction of insurance contracts, and general commercial law as it relates to contracts, agencies, partnerships, corporations, personal property, real estate and mortgages, negotiable instruments, bankruptcy, bailments, common and private carriers, and negligence.

131 *Business Finance* (3) Dockeray, Timberlake

Fall—morning and evening; spring—evening; summer 1956.

Basic principles involved in the financing of business enterprises. Prerequisite; Accounting 1–2.

136 *Commercial Credit* (3) Timberlake

Fall—evening.

Types and sources of credit information, credit relationships from the standpoint of the commercial bank and the commercial business enterprise. Prerequisite: Accounting 1–2.

138 *Investments* (3) Dockeray

Spring—evening; summer 1956.

Analysis of factors of investment credit with application to different types of investments, proper selection of investments for various classes of investors, regulation. Prerequisite: Accounting 1–2.

141 *Principles of Marketing* (3) Barnewall, ———

Fall—morning; spring—evening.

A survey of marketing, giving particular attention to consumption, retailing, wholesaling, and sales management; the entire marketing structure and its relation to the total economy. Prerequisite: Economics 1–2.

142 *Marketing Problems* (3) Barnewall

Spring—morning.

Marketing principles applied to specific distribution policy and operating problems of retailers, wholesalers, and manufacturers handling consumer and industrial goods. Prerequisite: Business Administration 141.

143 *Marketing Research* (3) Barnewall

Not offered 1956–57.

Study of market research methods and techniques; sources of data; the use of market research in business operations.

145 *Sales Management* (3) Barnewall

Fall—morning.

Organization of the sales department, sales planning and forecasting, quotas, territories, performance standards, and analysis and control of distribution costs. Prerequisite: Business Administration 141.

146 *Sales Management Problems* (3) Jessup

Fall—evening.

Problems of marketing executives with respect to planning sales programs, territories, and salesmen's quotas; selection, training, and supervision of sales force. Prerequisite: Business Administration 145.

147 *Advertising* (3) ———

Fall—evening.

Advertising as a function of marketing and merchandising; evaluation, purchase, criticism, and control of advertising; uses and limitations of advertising as a tool of management.

148 *Wholesaling* (3)

Not offered 1956–57.

The wholesale function; organization and types; economics of wholesale authorities.

149 *Retail Advertising and Sales Promotion* (3) ———

Fall—morning.

Operation of the advertising department in a retail store. Use of newspaper, radio, and television advertising by retail stores. Other advertising media, programming, and budgeting.

150 *Principles of Purchasing* (3) Barnewall

Spring—evening.

Organization for purchasing, purchasing policies, market relationships, selection of merchandise, purchasing information and records.

151 *Retailing* (3) Barnewall

Spring—morning.

Principles and problems in retail merchandising, including markup, inventory valuation, and expense control; service and personnel problems.

152 *Supervision and Training of Retail Personnel* (3) ———

Spring—evening.

The organization and operation of the personnel department in a retail establishment. Selection, supervision, and training of sales and service personnel.

158 *Traffic Management and Warehousing* (3) ———

Spring—evening.

Organization and records of traffic department, routing of shipments, services by carriers, rates and charges, relation of shipper to transportation agencies; problems of storage and inventory management.

161 *Commercial Law: Contracts, Sales, Agency, and Bailments* (3) ———, Murphy

Fall—afternoon and evening.

162 *Commercial Law: Negotiable Instruments, Property, Mortgages* (3) ———, Murphy

Spring—afternoon and evening.

163 *Law in Relation to the Form of Business Units: Corporations, Partnerships, and Trusts* (3) — Murphy

Fall—evening.

175 *Introduction to Foreign Trade* (3) — Kaye

Fall—evening.

Terminology, trade usages and practices, conditions essential to successful trading, economic bases of international trade, obstacles to trade, tariffs, impact of governmental controls on private trade. Prerequisite: Economics 1–2.

176 *Exporting and Importing* (3) — Kaye

Not offered 1956–57.

Policy and operating questions of foreign trade, financing and documentation of shipments. Prerequisite: Business Administration 175.

178 *Foreign Markets* (3) — Ogdon

Spring—evening.

Pattern of world trade by countries and commodities, methods of preparing market surveys, selected regional market analyses. Prerequisite: Economics 1–2.

191 *Business Reports and Analyses* (3) — Dockeray

Not offered 1956–57.

Research in specific business problems and reports for management use. Open to seniors.

195 *Controllership* (3) — Edwards

Fall—evening.

The duties, responsibilities, and place of the controller in a business organization; relations of controller to other departments and regulatory bodies; and the controller's relation to price setting and inventories, depreciation policies, internal auditing, expense control and budgeting, and financial reports to management, stockholders, and employees. Prerequisite: Accounting 1–2. Open to seniors.

197 *Introduction to Business Policy* (3) — Johnson

Fall—evening.

Significance of business policies in management; formulation of policies; relation of various organizational levels to policy making; some significant policies, including case problems.

198 *Problems in Business Management* (3) — Horchow, Johnson

Fall—morning and evening; spring—morning and evening.

Principles and methods of management illustrated by cases drawn from business and industry. Prerequisite: Business Administration 102. Open to seniors.

Third Group

231 *Corporate Financial Problems* (3) Dockeray

Fall—evening.

Financial practice in promotion, consolidation, and mergers; capital structure adjustments; and reorganization.

232 *Seminar in Business Finance* (3) Dockeray

Spring—evening; summer 1956.

Research in advanced financial problems.

241–42 *Seminar in Marketing* (3–3) Barnewall

Academic year—evening.

An advanced course in marketing, emphasizing special and current problems in the field. (Business Administration 241 is not a prerequisite for Business Administration 242.)

251 *Seminar in Retailing* (3) ———

Fall—evening.

An advanced course in retailing giving emphasis to trends in the development of retailing organizations and techniques.

268 *Management Engineering* (3) Clewlow

Fall—evening.

Analysis of the techniques for initiation and implementation of management engineering programs, with emphasis on organization and methods surveys, including the study of work measurement, work simplification, management audits, and other management improvement programs.

271–74 *Readings in Business* (3–3) The Staff

Academic year—as arranged.

Advanced readings in the fields of finance, marketing, and personnel management.

278 *The Dynamics of Business* (3)

Not offered 1956–57.

An analysis of the structure of American business, including a study of trend and cyclical change in economic activity and their bearing upon governmental policy.

286 *Management in the Armed Forces* (3) Clewlow

Not offered 1956–57.

Special problems of military organization and management; applicability of business management techniques to the armed forces.

287 *Relation of Government to Business* (3)

Not offered 1956–57.

Activities of government in their relation to business management in such areas as labor relations, wages, production, and prices.

288 *Executive Leadership* (3) ———

Spring—evening.

An examination of the role of the executive in public and private administration. An intensive consideration of the ways the executive accomplishes his objectives by planning, organizing, communicating with and developing staff, and controlling their performance; a balanced review of literature and practical illustrations.

291–92 *Seminar in Business Management* (3–3) Owens

Academic year—evening; summer 1956—Business Administration 291 (3).

Research on various phases of management, including business, industrial, and personnel management.

293–94 *Business Research* (3–3) The Staff

Not offered 1956–57.

296 *Seminar in Controllership* (3) Jessup

Spring—evening.

Research on advanced problems of the controller in all types of business organization and the Federal Government.

297–98 *Business Policy* (3–3) Jessup

Academic year—evening.

Problems of management are analyzed with the view of developing a practical solution; cases are used to show the problems of personnel in marketing, industrial management, finance, etc.

299–300 *Thesis* (3–3) Dockeray and Staff

Academic year—evening.

Courses Offered in Special Programs

In addition to the regular courses announced above, the University offers the following business administration courses especially for students

enrolled in the following special programs: Navy Graduate Comptrollership Program, Air Force Advanced Management Program, and Engineering Administration.

193 *Business Communication* (3)
235 *Financial Management* (3)
250 *Contract Administration* (3)
253 *Procurement and Distribution* (3)
264 *Business Organization and Management* (3)
269 *Readings and Conferences in Controllership* (2)
271 *Management for Engineers I* (3)
272 *Management for Engineers II* (3)
275–76 *Human Relations in Business* (3–3)
284 *Readings and Conferences in Management* (2)
290 *Research Seminar in Management* (3)
295 *Research Seminar in Controllership* (3)

PUBLIC ADMINISTRATION

Third Group

210 *The Management Function* (3) Eastin

Spring—evening.

Principles and processes of management with particular attention to planning of organization, direction and coordination of work, internal communication, and measurement of achievement in government.

211 *Problems of Governmental Organization* (3) Brown

Fall—evening.

Theories and principles of organization; analysis of problem areas in administration, such as decentralization, staff-line, field-headquarters, and executive-legislative relationships.

212 *Case Studies in Administration* (3) Brown

Spring—evening.

Analysis and discussion of problems in public management, approached by the group using primarily the case method.

216 *Administrative Analysis and Research* (3) Provan

Spring—evening.

Management engineering; techniques of organization survey and work analysis; improvement of administrative effectiveness; application of principles of scientific management.

217 *New Tools of Management* (3)

Fall—evening.

This course provides information for the advanced student on latest developments in new methods of administration, including electronics devices (automative equipment), operations research, quality control, attitude measurement, and similar activities. Subjects discussed by guest lecturers with opportunity for individual discussion and consultation.

221–22 *Staff Functions in Government* (3–3) Hagberg

Academic year—evening.

Designed primarily to provide an understanding of the nature, use, and problems of the staff functions as tools of management. Survey of such staff areas as personnel, budgeting, controllership, procurement, property management, the agency lawyer, security, public relations and information, planning, research, the secretariat, management engineering, auditing, accounting, and administrative services.

225–26 *Internship in the Administrative Processes* (3–3) Stromsem

Academic year—as arranged.

This course is open only to persons selected by government agencies for participation in approved intern programs.

231 *Public Personnel Management* (3) Torpey

Fall—evening.

Basic principles; structure and organization of personnel offices; responsibilities; inter-agency relationships; personnel staffing, training and work measurement.

232 *Personnel Procedures and Problems* (3) Torpey

Spring—evening.

Study of such personnel functions as recruitment, selection, placement, promotion, supervision, evaluation, classification, and training. Practical problems of personnel administration.

233 *Employee Development and Utilization* (3)

Fall—evening.

Study of ways and means of increasing employee potential; the use of training programs and executive development; incentive systems.

237 *Intermediate Management and Supervision* (3) Eastin

Fall—evening.

The role of the supervisor and intermediate manager; methods for improving group performance; work measurement; pertinent regulations governing federal personnel.

241 *Human Relations in Governmental Administration* (3) — Torpey

Fall—evening.

Factors involved in working with people in governmental institutions. Study and research in human problems in management; discussion of programs for improved human relationships.

251 *Governmental Budgeting* (3) — Schwartz

Fall—evening.

The role of budgeting in management; the principles and practices of budgetary formulation and administration.

252 *Planning and Administering the Fiscal Program* (3) — ———

Spring—evening.

Performance budgeting; relating the work program to the fiscal program, budgetary evaluation. This course is primarily for students who have completed Public Administration 251.

254 *Controllership in the Federal Services* (3) — Krieger

Spring—evening.

Function of the controller in federal agencies; special problems analyzed; comparison of the controller function in government and business.

259 *Government Procurement and Property Management* (3)

Not offered 1956–57.

Principles and problems of government procurement; accounting and inventory; storage; development of specifications; property management.

260 *Policy Formulation and Administration* (3) — Brown

Spring—evening.

Policy development and administration as the goals of the agency. Participation in the process at various organization levels; communication; coordination and control.

261 *Public Opinion and the Administrator* (3) — Stromsem

Fall—evening.

Theories, techniques, and methods of working with the public; the use of interest groups in developing governmental programs, evaluating public relations programs; the importance of timing; use of public opinion measurement techniques.

271 *Reading and Conference Course in Public Management and Administration* (3) — Brown

Fall—as arranged.

The purpose of this course is to provide advanced students with directed reading in specific areas of public management and administration.

272 *Reading and Conference Course in Public Personnel Administration* (3) — Torpey

Spring—as arranged.

The purpose of this course is to provide advanced students with directed reading in specific areas of public personnel administration.

299–300 *Thesis* (3–3) — Brown and Staff

Academic year—evening.

One semester of the two semesters required will be conducted in seminar fashion.

CHEMISTRY

Benjamin Douglass Van Evera, Ph.D., Sc.D., *Professor of Chemistry*
*Samuel Nathaniel Wrenn, Ph.D., *Professor of Chemistry*
Charles Rudolph Naeser, Ph.D., *Professor of Chemistry, Executive Officer*
Robert Corbin Vincent, Ph.D., *Professor of Chemistry*
Reuben Esselstyn Wood, Ph.D., *Associate Professor of Chemistry*
William Frederick Sager, Ph.D., *Associate Professor of Chemistry*
James Willard Harkness, B.S., Ed.M., *Associate Professor of Chemistry*
Theodore Peter Perros, Ph.D., *Associate Professor of Chemistry*
William Edward Schmidt, Ph.D., *Associate Professor of Chemistry*
David Gover White, B.Chem.Eng., Ph.D., *Assistant Professor of Chemistry*
Ruth Haverstock Ness, M.S., *Instructor in Chemistry*

Registration.—Before completing registration each student must obtain from the representative of the Department an assignment to lecture, recitation, and laboratory sections.

Bachelor of Arts or *Bachelor of Science with a major in Chemistry (Columbian College—Departmental).*—Prerequisite: the Arts and Letters or the Science curriculum, respectively, in the Junior College, see pages 66 and 67. The following first group courses must be included: Chemistry 11–12, 21, and 22; Mathematics 19 and 20; Physics 5, 6, 7, and 8.

Required: the general requirements, as stated on pages 82–87, including the following second group courses: Chemistry 111–12, 113–14, 122, 151–52, and 135 or 155 (two semester hours). The work of the junior and senior years must be approved by the Department. The German language is strongly recommended for all majors, and both French and German are recommended for students planning to do graduate work.

Master of Arts or *Master of Science in the field of Chemistry (Columbian College).*—Prerequisite: the degree of Bachelor of Arts or Bachelor of Science, respectively, with a major in Chemistry from this University, or the equivalent.

Required: the general requirements as stated on pages 89–92. The thirty hours of required work must include Chemistry 131–32, 193, 211–12, 251–52, 291–92, 299–300, and the program must include at least four semester hours of laboratory courses. On the basis of failure to pass qualifying examinations given during the first week of classes, a student may be excluded from those required courses and advised to review prerequisite courses. A reading knowledge examination in French or German (German preferred) must be passed before the second half of the work is started.

Doctor of Philosophy (Graduate Council).—See page 97.

Bachelor of Science in Engineering with an option in Chemistry (School of Engineering).—See pages 138–41, 143–44 and 144–45. The Chemistry courses required for this degree are the same as those required for the Bachelor of Science degree with the major in Chemistry as itemized above.

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* On sabbatical leave fall semester 1956–57.

Bachelor of Arts in Education with a teaching field in Chemistry (School of Education).—Prerequisite: the Education curriculum, page 68.

Required: the chemistry option, page 167; and the professional courses listed on page 172.

First Group

3–4 *Fundamentals of Physical Science* (4–4) Schmidt

A year course: credit is not given for the first half until the second half is completed.
Academic year: lecture (3 hours)—morning, laboratory (3 hours)—afternoon.

Introduction to methods and achievements of physical science, covering selected topics in chemistry, physics, astronomy, and geology. For non-science majors. Laboratory fee, $11 a semester.

11–12 *General Chemistry* (4–4) Naeser and Staff

A year course: credit is not given for the first half until the second half is completed.
Lecture (2 hours), laboratory (4 hours), recitation (1 hour).
First half: fall—morning, afternoon, and evening; spring—morning, afternoon, and evening; summer 1956. *Second half:* fall—afternoon and evening; spring—morning, afternoon, and evening; summer 1956.

Elementary course in general chemistry. Prerequisite: one year of high school algebra. Laboratory fee, $18 a semester.

21 *Qualitative Inorganic Analysis* (4) Vincent

Lecture (2 hours), laboratory (4 hours).
Fall—afternoon and evening; spring—afternoon and evening; summer 1956.

Theoretical and practical study of methods of separating and identifying the more common cations and anions using semi-micro techniques. Prerequisite: Chemistry 12. Laboratory fee, $18.

22 *Quantitative Inorganic Analysis I* (4) Schmidt

Spring: lecture (2 hours)—morning and evening; laboratory (6 hours)—morning, afternoon, and evening. Summer 1956.

Theory and practice of quantitative analysis by typical volumetric and gravimetric procedures. Prerequisite: Chemistry 21. Laboratory fee, $18.

Second Group

111–12 *Physical Chemistry Lectures* (3–3) Wood

A year course: credit is not given for the first half until the second half is completed.
Academic year—morning and evening.

Introduction to physical chemistry. Students registering for Chemistry 111–12 must register concurrently for Chemistry 113–14 unless they

already have adequate credit for physical chemistry laboratory. Prerequisite: Chemistry 22 and 152; Mathematics 20; Physics 8.

113–14 *Physical Chemistry Laboratory* (2–2) Wood

A year course: credit is not given for the first half until the second half is completed.
Academic year—afternoon and Saturday morning.

Laboratory to accompany Chemistry 111–12. Students registering for Chemistry 113–14 must register concurrently for Chemistry 111–12 unless they already have credit for lectures in physical chemistry. Laboratory fee, $18 a semester.

122 *Quantitative Inorganic Analysis II* (4) Schmidt

Fall: lecture (2 hours)—afternoon and evening; laboratory (6 hours)—morning and evening.

Continuation of Chemistry 22 including theory and practice of separations, organic reagents, electrochemistry, and colorimetry in analysis. Prerequisite: Chemistry 22. Laboratory fee, $18.

131–32 *Inorganic Chemistry* (2–2) Naeser

A year course: credit is not given for the first half until the second half is completed.
Academic year—evening.

Application of modern chemical theories to inorganic substances and reactions; detailed study, developed from the periodic table, of the descriptive chemistry of the more common elements. Prerequisite: Chemistry 152. Prerequisite or concurrent registration: Chemistry 111–12 and 113–14.

135–36 *Inorganic Chemistry: Preparations* (2–2) Perros

First half: fall—evening; spring—evening. *Second half:* spring—evening.

Application of the technique of inorganic chemistry to the preparation and purification of a list of selected substances. Prerequisite: Chemistry 152; prerequisite or concurrent registration: Chemistry 111–12 and 113–14. Laboratory fee, $18 a semester.

151–52 *Organic Chemistry* (4–4) Sager, Wrenn

A year course: credit is not given for the first half until the second half is completed.

First half: lecture (3 hours)—morning and evening, laboratory (3 hours)—afternoon and evening; summer 1956. *Second half:* lecture (2 hours)—morning and evening, laboratory (6 hours)—afternoon and evening; summer 1956.

Chemistry of the compounds of carbon. Prerequisite*: Chemistry 21. Laboratory fee: Chemistry 151, $11; Chemistry 152, $18.

* This prerequisite may be waived in the case of the student who has earned a grade of *C* or better in Chemistry 12 within the past two years.

155 *Organic Chemistry: Preparations* (2 or 3) Wrenn

Spring—evening.

Synthesis of organic compounds and application of the technique of organic chemistry to the preparation of pure compounds, using larger amounts and greater refinements than in Chemistry 151–52. Prerequisite: Chemistry 22 and 152. Laboratory fee, $10.50 a semester hour.

156 *Qualitative Organic Analysis* (3) Wrenn

Spring: lecture (1 hour), laboratory (6 hours)—evening.

Identification of pure organic compounds, separation of mixtures, and identification of their components. Required of all students planning thesis work in Organic Chemistry. Prerequisite: Chemistry 22 and 152. Laboratory fee, $18.

191 *History of Chemistry* (2) Perros

1957–58 and alternate years.

Historical development of chemistry. Prerequisite: Chemistry 22 and 152.

193 *Chemical Literature* (1) Wrenn

Spring—evening.

A general course in chemical literature with reference work and reports. Prerequisite: Chemistry 22 and 152; prerequisite or concurrent registration: Chemistry 111–12 and 113–14.

THIRD GROUP

203 *Chemical Kinetics* (2) Wood

1957–58 and alternate years.

The rates of chemical reactions and the factors influencing them. Prerequisite: Chemistry 112.

211–12 *Advanced Physical Chemistry* (2–2) Wood

Academic year—evening.

Development of the principles of thermodynamics and kinetic theory and their application to chemical problems. Prerequisite: Chemistry 111–12 and 113–14.

216 *Statistical Mechanics* (3) Sager

1956–57 and alternate years. Spring—evening.

An introduction to classical and quantum statistics designed to acquaint the student with the basic principles and application of the method. Prerequisite or concurrent registration: Chemistry 212, or permission of instructor.

221–22 *Advanced Analytical Chemistry* (2 or 3) Schmidt

Lecture (2 hours), laboratory (3 hours—optional).
First half: fall—evening. *Second half:* not offered 1956–57.

Theory and application of recent methods of analysis including electrical and optical instrumentation. Prerequisite: Chemistry 22 and 122. The lectures may be taken for 2 credits a semester without laboratory work. Laboratory fee, $11 a semester.

231–32 *Special Topics in Inorganic Chemistry: the Chemistry of the Less Familiar Elements* (2–2) Perros, White

1957–58 and alternate years.

First half: the lanthanide and actinide elements, emphasis on metallurgy and chemistry; platinum metals, emphasis on complex ion formation. *Second half:* certain hydrides, organometallic and organosilicon compounds, and metal carbonyls; chemistry and uses of less common elements such as germanium and gallium. Prerequisite: Chemistry 132 and 152.

233–34 *Radiochemistry* (2–2)

Not offered 1956–57.

The preparation, properties, and uses of radioactive isotopes, both natural and artificial. Prerequisite: Chemistry 131–32.

251–52 *Advanced Organic Chemistry* (3–3) Sager

Academic year—evening.

Syntheses, reactions, and properties of carbon compounds; fundamental theories of organic chemistry. Prerequisite: Chemistry 152; prerequisite or concurrent registration: Chemistry 111–12, 113–14, and 193.

253 *Advanced Synthetic Organic Chemistry* (3) Wrenn

Not offered 1956–57.

Study of reactions employed in the synthesis of organic compounds. Prerequisite: Chemistry 251.

257 *Theoretical Organic Chemistry* (3) Sager

1957–58 and alternate years.

Survey of modern theories of organic chemistry with emphasis on reaction mechanisms. Prerequisite: Chemistry 252.

291–92 *Seminar: Recent Developments in Chemistry* (1–1) The Staff

Academic year—evening.

Discussions of special problems. All students registered for a

Master's degree in Chemistry are required to attend this seminar during residence for the degree, and to take part in its programs. Credit for participation in the seminar work may be obtained by registering for this course during the last two semesters of residence; this credit, however, is based upon the seminar work during the entire period of residence.

295–96 *Research* (arr.) The Staff

Academic year—as arranged; summer 1956.

Research on problems approved by the Staff. Open to qualified students with advanced training. Laboratory fee, $7.50 a semester hour.

299–300 *Thesis* (3–3) The Staff

Academic year—as arranged; summer 1956.

Laboratory fee, $18 a semester.

CIVIL ENGINEERING

Carl Hugo Walther, B.E., M.C.E., *Professor of Civil Engineering*
Martin Alexander Mason, B.S. in Eng., Ing.-Dr., *Professor of Civil Engineering*
Robert Aaron Hechtman, M.S. in C.E., Ph.D., *Professor of Civil Engineering, Executive Officer*
Waldo Edward Smith, B.E. in C.E., M.S. in C.E., *Professorial Lecturer in Civil Engineering*
Ralph Edward Fuhrman, B.S. in C.E., M.S. in Eng., D.Eng., *Professorial Lecturer in Civil Engineering*
Charles Eugene Cutts, M.S. in C.E., Ph.D., *Professorial Lecturer in Civil Engineering*
Raymond Pugh Eyman, C.E., *Associate Professor of Civil Engineering*
_____, *Assistant Professor of Civil Engineering*
Richard Henry Welles, B.C.E., *Lecturer in Civil Engineering*
John Gordon Hammer, M.C.E., Ph.D., *Lecturer in Civil Engineering*

Bachelor of Civil Engineering (School of Engineering).—See pages 138–41 for statement of requirements.
Master of Science in Engineering (School of Engineering).—See pages 146–48 for statement of requirements.
Civil Engineer (School of Engineering).—See page 150 for statement of requirements.

First Group

12 *Surveying* (3) — Eyman and Staff

Spring: lecture (2 hours), field work (3 hours)—afternoon and Saturday.

Principles, methods, and instruments used in making space measurements, including layout, elements of simple curves, coordinate system, and treatment of observational errors. Prerequisite: Mathematics 12 and Mechanical Engineering 4. Surveying fee, $13.

13 *Higher Surveying* (3) — Eyman

Fall: lecture, laboratory, and field work—Saturday morning.

Elements of geodesy, triangulation, topography, hydrography, and precise and trigonometric leveling. Prerequisite: Civil Engineering 12. Surveying fee, $13.

14 *Elementary Photogrammetry* (3) — The Staff

Spring—evening.

Principles, methods, and instruments used in photographic survey-

ing and production of maps; photographic interpretation; principles of stereoscopy. Prerequisite: Civil Engineering 13; Physics 6. Laboratory fee, $11.

21 *Analytical Mechanics: Statics* (3) The Staff

Fall—morning and evening; spring—evening.

Free-body diagrams; equilibrium; stresses in simple frames and trusses; analysis of simple members in tension, compression, bending, or torsion; strain and deformation; hydrostatics; friction; centroids and moments of inertia. Prerequisite: Physics 6; prerequisite or concurrent registration: Mathematics 20.

22 *Analytical Mechanics: Dynamics* (3) The Staff

Fall—evening; spring—morning and evening.

Kinetic friction; simple kinematics; translation, rotation, and plane motion of rigid bodies; kinematics; work; energy; power; impulse; momentum; impact; simple vibrations. Prerequisite: Civil Engineering 21.

SECOND GROUP

123 *Strength of Materials* (3) The Staff

Fall—morning and evening.

Development and application of principles necessary to analyze stresses in and deformation of simple machine and structural components; combined stresses; strain energy; buckling of columns and beams; design of simple members and joints; composite members and simple reinforced concrete columns and beams; theories of failure. Prerequisite: Civil Engineering 21.

125 *Engineering Materials* (3) The Staff

Fall—morning and evening.

Mechanical behavior of engineering materials including mechanical testing, elasticity, plasticity, fracture, ductibility, creep, and fatigue; elements of metallurgy and physics of metals. Prerequisite: Chemistry 12; Physics 8; Civil Engineering 21.

127 *Soil Mechanics* (3) The Staff

1956–57 and alternate years: fall—morning; 1957–58 and alternate years: fall—evening.

A limited study of substructure materials including soils and rocks and their properties as foundation material; seepage; plastic equilibrium; lateral earth pressures, bearing capacity, and settlement. Prerequisite or concurrent registration: Civil Engineering 125.

132 *Fluid Mechanics* (4) Mason, Szebehely

Spring: lecture—morning and evening, laboratory—afternoon and evening.

Principles of equilibrium, momentum, and the conservation of energy and mass applied to the development of the fundamentals of the flow of viscous and ideal compressible and incompressible fluids; dimensional analysis and model theory; laboratory work emphasizes engineering principles, planning and analysis of tests, systematic observations of data, and preparation of reports. Prerequisite: Mechanical Engineering 111 and Civil Engineering 22. Laboratory fee, $11.

135 *Hydraulic Engineering* (3) Smith

Fall—evening.

Applied fluid mechanics, hydrology, principles of water conservation; introduction to flood control, water power, drainage and irrigation, canalization of rivers, multiple-purpose projects, and general development of water resources. Prerequisite: Civil Engineering 132.

138 *Sanitary Engineering* (3) Fuhrman

Spring—evening.

Collection, storage, purification, and distribution of water; sewerage systems and treatment of sewage. Prerequisite: Chemistry 12 and Civil Engineering 135.

143–44 *Structural Theory and Design I–II* (3–3) Hechtman, Walther

1956–57 and alternate years: academic year—afternoon; 1957–58 and alternate years: academic year—evening.

Introduction to the structural behavior of statically determinate and indeterminate beams, frames, and trusses, and the application of basic principles to their analysis; moving loads; analysis and design of simple metal, reinforced concrete, and timber structures. Prerequisite or concurrent registration: Civil Engineering 123 and 125.

145 *Steel and Timber Structures* (3) Hechtman

1956–57 and alternate years: fall—evening; 1957–58 and alternate years: fall—afternoon.

Design of steel and timber buildings, bridges, and details; structural properties of steel and timber. Prerequisite: Civil Engineering 144.

146 *Concrete Theory and Design* (4) Walther

1956–57 and alternate years: spring—evening; 1957–58 and alternate years: spring—afternoon.

Structural properties of plain and reinforced concrete including laboratory; theory and design of reinforced concrete structures. Prerequisite: Civil Engineering 127 and 144. Laboratory fee, $11.

153 *Structural Analysis* (3) — The Staff

1956–57 and alternate years: fall—morning; 1957–58 and alternate years: fall—evening.

Further treatment of statically indeterminate structures; introduction to plate theory and elastic instability; numerical and approximate methods of analysis; model analysis. Prerequisite: Civil Engineering 144.

154 *Advanced Dynamics* (3) — The Staff

1956–57 and alternate years: spring—morning; 1957–58 and alternate years: spring—evening.

Theory of mechanical vibrations; vibrations in and dynamic loading on structures. Prerequisite: Civil Engineering 153.

164 *Transportation Engineering* (3)

Spring—evening.

Economics, location, construction, operation, and maintenance of transportation systems. Prerequisite: Civil Engineering 12, 125, and 127.

167 *Regional and Urban Planning* (3) — The Staff

Fall—evening.

Introduction to regional and urban planning with emphasis on requirements for transportation systems. Prerequisite: Civil Engineering 164.

186 *Engineering Contracts and Specifications* (2) — The Staff

1956–57 and alternate years: spring—morning; 1957–58 and alternate years: spring—evening.

Contract essentials, types, and legal principles; analysis and preparation of specifications. Prerequisite: senior status.

Third Group

201 *Advanced Mechanics of Materials* (3) — Walther

1956–57 and alternate years: fall—evening.

Advanced topics in the mechanics of materials. Stresses at a point, thick cylinders, general binding, torsion, localized stress, and stress concentration.

202 *Applied Elasticity* (3) — The Staff

1956–57 and alternate years: spring—evening.

The theory of elasticity as applied in three-dimensional analysis of stress, strain, torsion, and bending.

203 *Foundation Problems* (3) Cutts

1957–58 and alternate years.

The integration of structural theory and soil mechanics, as applied to foundation, retaining wall, slope stability, and drainage problems. The interrelationship of structural action and soil stability is emphasized.

204 *Theory of Structures* (3) Hechtman

1957–58 and alternate years.

Advanced analysis and design of indeterminate structures, such as, continuous and suspension bridges, high building frames, arches, rigid frames, and columns.

205 *Prestressed Concrete Theory* (3) The Staff

1957–58 and alternate years.

A study of the theory and applications of prestressed concrete, including the design of prestressed concrete structures.

299–300 *Thesis* (3–3) The Staff

Academic year—as arranged.

CLASSICAL LANGUAGES AND LITERATURES

John Francis Latimer, Ph.D., *Professor of Classical Languages and Literatures, Executive Officer*

The Department of Classical Languages and Literatures offers two types of courses: (1) those which illustrate the literary, linguistic, and cultural backgrounds of Western Civilization, and for which no knowledge of the ancient languages is required. These courses are designed to supplement and strengthen the broad general backgrounds of students who plan to concentrate in the fields of English or other literatures, History, Art, Drama, or Philosophy, or of those who wish to increase their general knowledge and appreciation of the bases of the great humanistic traditions as part of a well-rounded education. (2) Two years of Latin and two years of Greek are offered alternately for those who wish to fulfill the language requirements of the Junior College as set forth on page 65.

COURSE IN ENGLISH TRANSLATION

71–72 *Greek and Roman Backgrounds in Literature* (3–3) Latimer

Not offered 1956–57.

Selected Greek and Roman masterpieces and their literary influence.

LANGUAGE COURSES

1–2 *First-year Latin* (3–3) Latimer

A year course: credit is not given for the first half until the second half is completed.
1957–58 and alternate years.

Functional presentation of the essentials of the language, with appropriate reading selections. Development of English derivatives, and introduction to Roman life and literature.

3–4 *Second-year Latin* (3–3) Latimer

A year course: credit is not given for the first half until the second half is completed.
1956–57 and alternate years: academic year—evening.

A continuation of the preceding course, but with increased emphasis on reading Latin selections which illustate Roman life and literature. Continuation of vocabulary building in English. Prerequisite: Classical Languages 1–2 or two years of high school Latin.

11–12 *First-year Greek* (3–3) Latimer

A year course: credit is not given for the first half until the second half is completed.
1956–57 and alternate years: academic year—evening.

Essentials of grammar. Reading selections from the New Testament and patristic Greek.

13–14 *Second-year Greek* (3–3) Latimer

A year course: credit is not given for the first half until the second half is completed.
1957–58 and alternate years.

Review of grammar. Emphasis on rapid reading of selections from Hellenistic and patristic Greek.

RELATED COURSES IN ANOTHER DEPARTMENT

Art 101 *Ancient Art* (3)
Art 102 *Medieval Art* (3)

DERMATOLOGY AND SYPHILOLOGY

Harry Ford Anderson, M.D., *Professor of Dermatology and Syphilology. Executive Officer*

George William Creswell, A.B., M.D., *Assistant Clinical Professor of Dermatology and Syphilology*

Hayden Kirby-Smith, B.S., M.D., *Assistant Clinical Professor of Dermatology and Syphilology*

James Quincy Gant, Jr., M.S., M.D., *Assistant Clinical Professor of Dermatology and Syphilology*

Theodore Claremont Chen Fong, M.D., *Associate in Dermatology and Syphilology*

Wendell Melvin Willett, M.D., *Associate in Dermatology and Syphilology*

Reuben Goodman, M.D., *Associate in Dermatology and Syphilology*

313 *Dermatology and Syphilology* — The Staff

Fall—1 hour a week.

Lectures on diseases of the skin and syphilis.

317–18 *Clinic* — The Staff

Two weeks in rotation as arranged during academic year.

Case demonstrations, diagnosis, and treatment of skin diseases and syphilis. D. C. General Hospital.

407–8 *Clinic* — The Staff

Two hours a week as arranged in rotation during academic year.

Dermatology and syphilology in infants and children. Children's Hospital.

409–10 *Clinic* — The Staff

Two hours a week as arranged in rotation during academic year.

Clinical demonstrations, diseases of the skin. University Hospital.

ECONOMICS

Arthur Edward Burns, Ph.D., *Professor of Economics*
Donald Stevenson Watson, Ph.D., *Professor of Economics*
Thomas Willard Holland, Ph.D., LL.B., *Visiting Professor of Labor Economics*
Gerhard Colm, Dr. rer. pol., *Professorial Lecturer in Economics*
Ralph Aubrey Young, M.B.A., Ph.D., *Professorial Lecturer in Economics*
George Wythe, Ph.D., *Professorial Lecturer in Economics*
George Jaszi, Ph.D., *Professorial Lecturer in Economics*
Edward Campion Acheson, Ph.D., *Associate Professor of Finance*
Walter David Fackler, A.B., *Assistant Professor of Economics*
Wilson Emerson Schmidt, Ph.D., *Assistant Professor of Economics*
John William Skinner, Ph.D., *Assistant Professor of Economics*

Bachelor of Arts with a major in Economics (Columbian College—Departmental).—Prerequisite: the Arts and Letters curriculum in the Junior College, including Economics 1–2 and Statistics 51, see page 66.

Required: the general requirements as stated on pages 82–87 and (1) Economics 101–2 and 121 and fifteen additional hours in second-group courses to be selected with the approval of the adviser; (2) Economics 198 which may be taken upon the completion of twenty-one of the required hours in the major; (3) Statistics 111–12; (4) nine semester hours of other second-group courses selected from the following departments—Accounting, Business and Public Administration, History, Philosophy, Political Science, Sociology, and Statistics.

Bachelor of Arts with a major in Latin American Civilization (Columbian College—Field-of-Study).—See the Department of History.

Master of Arts in the field of Economics (Columbian College).—Prerequisite: the degree of Bachelor of Arts with a major in Economics at this University, or the equivalent.

Required: the general requirements for the degree are stated on pages 89–92. The thirty hours of required work must include (1) twelve semester hours in courses numbered 201–208, 213, 214, 251; (2) six semester hours in two of the following fields: public finance, monetary and fiscal policy (Economics 223–24, 261–62); labor economics (Economics 241, 244); economic policy (Economics 265, 266); international relations (Economics 281–82, 290); and (3) thesis (Economics 299–300).

Doctor of Philosophy (Graduate Council).—See page 97.

Bachelor of Arts in Government with courses in Economics (School of Government).—See pages 188–90.

Master of Arts in Government with a major in Economic Policy (School of Government).—Prerequisite: the degree of Bachelor of Arts with a major in Economics at this University, or the equivalent.

Required: the general requirements for the degree are stated on pages 192–95. The thirty hours of required work must include Economics 265, 266, and the thesis, Economics 297–98.

For information concerning other Master of Arts curricula in the School of Government with courses in Economics, see pages 192–98.

Bachelor of Science in Engineering with an option in Economics (School of Engineering).—See pages 138–41, 143–44, 145.

First Group

1–2 *Principles of Economics (3–3)** — Skinner and Staff

Lecture (2 hours), recitation (1 hour).
First half: fall—morning and evening; spring—morning and evening; summer 1956. *Second half:* fall—evening; spring—morning and evening; summer 1956.

Survey of the major economic principles, institutions, and problems in contemporary economic life. Economics 1 is prerequisite to Economics 2.

Second Group

101–2 *Economic Analysis* (3–3) — Watson, Fackler

First half: fall—morning and evening; spring—evening; summer 1956. *Second half:* spring—morning and evening; summer 1956.

Analysis of demand, supply, and commodity pricing; theory of national income determination, pricing of productive services; welfare economics. Economics 101 is prerequisite to 102.

104 *History of Economic Thought* (3) — Burns

Spring—morning.

History of the major schools of economic thought; influence of changing problems on the development of economic theory.

105 *Business Cycles* (3) — Burns

Fall—evening.

Analysis of strategic factors in economic instability, survey of recent business cycle theories.

121 *Money and Banking* (3) — Acheson

Fall—morning and evening; spring—morning; summer 1956.

Theory of money, credit, and banking; commercial banking and the Federal Reserve System; other financial institutions; international aspects of money; current financial problems.

123 *Monetary Theory and Policy* (3) — Acheson

1956–57 and alternate years: fall—morning; 1957–58 and alternate years: fall—evening.

* Economics 1–2 is prerequisite to all other courses in Economics.

Principal contemporary theories, background of recent monetary policy.

124 *Financial Institutions and Economic Development* (3) Acheson

1956–57 and alternate years: spring—evening.

Evolution and growth of the money-mechanism in United States economy, changing relationships of money markets to role of investment, special emphasis on monetary framework for national economic development.

126 *Foreign Exchange and International Finance* (3) Acheson

Not offered 1956–57.

The theory and practice of the foreign exchanges; current methods of international transfer.

133 *The Economy of the Soviet Union* (3)

Not offered 1956–57.

Development and main features of the economic life of the Soviet Union (See History 146, 246, and Geography 296).

141–42 *Labor Economics* (3–3) Holland

1956–57 and alternate years: academic year—evening; 1957–58 and alternate years: academic year—morning.

Wages, hours, and employment; labor organizations; labor legislation and the federal administrative boards.

161–62 *Public Finance and Taxation* (3–3) Fackler

1956–57 and alternate years: academic year—evening; 1957–58 and alternate years: academic year—morning.

General survey of government expenditures, sources and methods of taxation, economic effects of expenditures and taxes, and of government debt policies.

165 *Government Control of Economic Activity* (3) Watson

Fall—evening.

Changing role of government in promoting and regulating economic activity, types and spheres of control.

166 *Comparative Systems of Economic Reform* (3) Watson

Not offered 1956–57.

Critical analysis of the major theories of economic and social reform, with special attention to their origins and backgrounds.

171 *Economics of Transportation* (3)

Not offered 1956–57.

History, organization, competition, rates, and regulation of motor, air, rail, and water carriers.

172 *Economics of Public Utilities* (3)

Not offered 1956–57.

Regulation, valuation, rate-making, development, and public policy.

181–82 *International Economics* (3–3) Schmidt

Academic year—afternoon and evening; summer 1956.

Survey of world economics, theories of international trade, analysis of international economic problems, and the international organizations.

183–84 *International Economic Policy* (3–3) Schmidt

Academic year—morning.

Historical and theoretical analysis of tariffs, exchange rates, exchange and trade control, discrimination, and capital movements; policies related thereto.

185–86 *Economic History and Problems of South America* (3–3) Wythe

Not offered 1956–57.

Evolution and existing structure of the economies of the South American Republics, with particular emphasis on basic factors affecting development and prospects. (See also Geography 192.)

187–88 *Economic History and Problems of Middle America* (3–3) Wythe

1957–58 and alternate years.

Economic structure and development of Mexico, Central America, and the Antilles with attention both to individual country situations and to regional and over-all problems. (See also Geography 191.)

198 *Readings and Research* (3) The Staff

Fall—as arranged; spring—as arranged.

Comprehensive survey of economics. Open only to students whose major is economics and who have completed twenty-one hours of course work in economics.

THIRD GROUP

201–2 *History and Literature of Economic Thought* (3–3) Burns

Academic year—evening.

Critical analysis and interpretation of the development and the literature of economic thought, origins, and problems of the major types of theory, and their relation to present problems and policies.

203–4 *Contemporary Economic Theory* (3–3) Watson

Academic year—evening.

The contributions of Marshall, Chamberlin, Robinson, Hicks, and others.

205 *Theory of Employment and Income* (3) ———

Fall—evening.

Determinants of the level of employment and income, Keynesian and classical systems contrasted, and recent literature on the subject.

206 *Business Cycle Theory* (3) ———

Spring—evening.

The general characteristics of business cycle theories and discussion of particular theories.

208 *The National Income* (3) Jaszi

Not offered 1956–57.

The theory of economic aggregates, measurement and policy aspects of national income.

211 *Readings in Advanced Economics* (3) Burns and Staff

Fall—as arranged; spring—as arranged.

Integration and coordination of advanced economic theories.

213 *Economic Thought in the Twentieth Century* (3) Burns

Summer 1956.

Continuation of Economics 201–2. The principal trends in economic thought during the present century.

214 *Quantitative Economics* (3)

Not offered 1956–57.

Social accounting: forms and uses; budget and income accounts; money-flows and input-output analysis; aggregative econometric models; programming, single-equation estimating techniques; analysis of changing composition of economic aggregates.

219–20 *Managerial Economics* (3–3) Watson

Academic year—evening.

Analysis of price, production, and inventory policies of business firms.

223–24 *Monetary Policy and Central Banking* (3–3) Young

Academic year—evening.

The money system in its relation to national income, monetary policies of the Federal Reserve and other central banking systems.

241 *Labor Economics* (3) Holland

Fall—evening.

Implications of industrialism for labor, questions of social policy, contributions of economics to solutions of labor problems.

244 *Labor Relations* (3) Holland

Spring—evening.

The collective bargaining contract and the elements comprising it, analysis of the policies of labor and of management.

251 *Theories of Economic Development* (3)

Not offered 1956–57.

Growth and change in economic activity, capital accumulation, innovations in technology and business organization.

261–62 *Public Finance and Fiscal Policy* (3–3) Colm

Academic year—evening.

Survey of the major contributions to the theory and doctrines of public finance. Special problems: budget problems; current tax problems; and federal, state, and local relationships.

265 *Theory of Economic Policy* (3) Watson

Fall—evening.

The nature, forms, methods, and objectives of economic policy; the relation of economic theory to economic policy.

266 *Problems of Governmental Economic Policy* (3) Watson

Spring—evening.

The execution of economic policies as they are affected by the processes of government.

267 *Economic Organization of the Communist Orbit* (3)

Fall—evening.

Development of the Soviet-type economy; organization under the Soviets; policies and problems: monetary, fiscal, production, allocative, foreign trade, economic growth. (See also History 146, 246, and Geography 196.)

281–82 *International Economics* (3–3) Schmidt

Academic year—evening.

The modern theories of international economics, the variables determining the balance of payments, techniques to obtain balance-of-payments equilibrium.

284 *United States Foreign Economic Policy* (3) Schmidt

Summer 1956.

Analysis of foreign aid program; international, commercial, and monetary policy of the United States; United States and international economic organization.

285–86 *Economic Development of Latin America* (3–3) Wythe

Academic year—evening.

Current policies and programs, capital formation, public and private; foreign loans and investment; social and technological pre-conditions of investment. *First half:* Middle Americas. *Second half:* South America.

287–88 *Latin America: Trade and Commodity Policy* (3–3) Wythe

1957–58 and alternate years.

Tariffs and exchange control systems, bilateral and general commercial agreements, terms of trade.

290 *Problems in International Financial Policy* (3) Acheson

Spring—evening.

International financial problems in recent decades and analysis of external economic problems of several countries.

297–98 *Thesis* (School of Government majors) (3–3) The Staff

Academic year—as arranged; summer 1956.

299–300 *Thesis* (3–3) The Staff

Academic year—as arranged; summer 1956.

Course Offered in Special Programs

In addition to the regular courses announced above, the University offers the following course especially for students enrolled in the Navy Graduate Comptrollership Program and the Air Force Advanced Management Program.

195 *Governmental and Industrial Economics* (3)

EDUCATION

*James Harold Fox, A.M., Ed.D., *Professor of Education*
Burnice Herman Jarman, A.M., Ed.D., *Professor of Education*
Blake Smith Root, A.M., Ed.D., *Professor of Education*
Ralph Windsor Ruffner, A.M., Ed.D., *Professor of Education, Executive Officer*
Ray La Forest Hamon, Ph.D., *Professorial Lecturer in Education*
Charles Edward Bish, A.M., Ed.D., *Professorial Lecturer in Education*
John Frederick Brougher, A.M., Ed.D., *Professorial Lecturer in Education*
Madaline Kinter Remmlein, Ph.D., J.D., *Professorial Lecturer in Education*
Joseph Bucol Johnson, A.M., Ed.D., *Professorial Lecturer in Education*
Florence Mary Lumsden, A.M., Ed.D., *Professorial Lecturer in Education*
William Samuel Rumbough, B.S. in E.E., Ed.D., *Professorial Lecturer in Education*
Howard Odin Johnson, A.M., Ed.D., *Professorial Lecturer in Education*
Anthony Charles LaBue, B.S., Ed.D., *Associate Professor of Education*
Mary Ellen Coleman, A.M., *Assistant Professor of Education*
Carol Ruth St. Cyr, Ph.D., *Assistant Professor of Education*
William Andrew McCauley, Ed.B., A.M., *Assistant Professor of Education*
LuVerne Crabtree Walker, A.M., *Lecturer in Education*
Raymond Ray Reed, A.M., *Lecturer in Education*
Grover LaMarr Angel, A.M., Ed.D., *Lecturer in Education*
Eugenia Campbell Nowlin, A.M., *Lecturer in Education*
John Carl Lang, A.M., Ed.D., *Lecturer in Education*
Levin Bartin Hanigan, B.S., Ed.D., *Lecturer in Education*

Consultants in Research

Wesley Earl Armstrong, A.B., Ed.D., *Chief for Teacher Education, U. S. Office of Education*
John Robert Ludington, Ph.D., *Specialist of Industrial Arts, U. S. Office of Education*
Francis James Brown, Ed.D., *Staff Associate, American Council on Education*

* On sabbatical leave spring semester 1966-67.

Field Service Coordinators

Alexander Anderson, A.M., *Assistant Principal Washington-Lee High School, Arlington, Virginia*

Mary Foust Maré, A.M., *Assistant Principal and Dean of Girls, Wakefield Junior-Senior High School, Arlington, Virginia*

Claude Manby Richmond, B.S., A.M. in Ed., *Principal, Stratford Junior High School, Arlington, Virginia*

Bachelor of Arts in Education (School of Education).—Prerequisite: the Education curriculum in the Junior College or the equivalent, or a certificate of graduation from an approvad normal school or the equivalent, see page 68.

Required: the satisfactory completion of a program of at least sixty-six semester hours in addition to the general education background courses in the Junior College curriculum. Each program is planned individually to meet the certification requirements of the student, see pages 164–72.

Master of Arts in Education (School of Education).—Prerequisite: a Bachelor's degree from an accredited institution. Programs are planned individually. The following areas of specialization are available: (1) school administration—secondary school principalship, or elementary school principalship; (2) adult education; (3) secondary education; (4) elementary education; (5) curriculum; (6) employee training; (7) guidance; (8) reading. See pages 176–80.

Doctor of Education (School of Education).—See pages 180–81.

A *Reading Clinic* — Coleman and Staff

Diagnosis of reading difficulties; individual or group lessons without academic credit. Fee: for diagnosis, $25; for individual lesson, $3.50; for group lesson, $2.50; material fee, $4.

Second Group

109–10 *Learning and Teaching* (3–3) — Ruffner

Lecture (2 hours), conference (1 hour), field work (2 hours) as arranged.

First half: fall—afternoon and evening; summer 1956. *Second half:* fall—afternoon; spring—afternoon and evening; summer 1956.

For the general student as well as the prospective teacher. *First half:* nature of learning approached through the study of classroom situations. *Second half:* nature of teaching approached through observation of classroom situations.

111 *Methods in Elementary Education* (6) — LaBue

Fall—all day Tuesday and Thursday.

For seniors in the elementary school curriculum. An integrated methods course dealing with the learning experiences designed to meet the developmental needs of children in the natural and social sciences, the language arts, and concepts of number. Also includes the study of general classroom procedures and the evaluation of

pupil progress. To be taken concurrently with Education 133. Prerequisite: Education 109–10 and 121–22.

113 *Elementary School Art* (3) Nowlin

Fall: lecture and laboratory (3 hours)—evening, field work—as arranged.

For juniors in the elementary school curriculum. Materials and methods. Prerequisite: Psychology 1 and 29. Material fee, $4.50.

114 *Elementary School Music* (3) Reed

Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged.

For juniors in the elementary school curriculum. Materials and methods. Prerequisite: Psychology 1 and 29.

115 *Teaching of Reading in the Elementary School* (3) Hanigan

Fall: lecture (2 hours)—evening, field work (2 hours)—as arranged.

A basic course in methods, techniques, materials, and activities essential to a good elementary school reading program. Prerequisite: Education 109–10 and 121–22 or teaching experience.

116 *Elementary School Social Studies* (3) St. Cyr

Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged.

For teachers. Content and methods of teaching. Prerequisite: Education 109–10 and 121–22 or teaching experience.

117 *Elementary School Science* (3) St. Cyr

Fall: lecture (2 hours)—Saturday morning, field work (2 hours)—as arranged; summer 1956.

For teachers. Materials and methods. Prerequisite: Education 109–10 and 121–22 or teaching experience.

120 *Elementary School Arithmetic* (3) St. Cyr

Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged.

For teachers. Content, materials, and methods. Prerequisite: Education 109–10 and 121–22 or teaching experience.

121–22 *Society and the School* (3–3) St. Cyr

Lecture (2 hours), conference (1 hour), field work (2 hours as arranged).
First half: fall—afternoon and evening; summer 1956. *Second half:* fall—afternoon; spring—afternoon and evening; summer 1956.

For the general student as well as the prospective teacher. *First half:* the local, national, and international roles of education; cooperation of

the school with other community agencies. *Second half:* organization and operation of schools; principles and functions.

128 *Children's Literature* (3) Walker

Spring. lecture (2 hours)—evening, field work (2 hours)—as arranged; summer 1956.

For juniors in the elementary school curriculum. Exploring and evaluating the newer books for children and the children's classics, understanding the contribution of literature in child development, appreciating children's original expressions. Prerequisite: Psychology 1 and 29.

131 *Common Teaching Skills* (3) Root

Fall—early afternoon; spring—late afternoon.

For seniors in the secondary school curriculum. Course, unit, and lesson planning; practical techniques used in connection with motivation, the assignment, group procedures, directing study, individual differences, evaluation, clerical routines, discipline, the homeroom, activity sponsorship, public relations. Prerequisite: Education 109–10 and 121–22.

133–34 *Observation and Student Teaching* (3–3 to 6) LaBue, Root

A year course: credit is not given for the first half until the second half is completed.

133A and 133B: fall—as arranged; 133A, 133B, and 133C: spring as arranged.

134A, 134B, and 134C: spring—as arranged.

For seniors in the elementary or secondary school curriculum. Section A is a year course for students in the elementary school curriculum. Section B is a year course for students in the secondary school curriculum. Section C is for students enrolled in the intensive program. Education 134 student-teaching fee, $50. Admission by permission of the instructor. Prerequisite: Education 109–10 and 121–22.

Special Methods Courses*

To be elected in the senior year after substantial preparation in the teaching fields concerned by the students in the secondary school curriculum. Course requirements and hours of credit vary with license requirements. Practices of successful teachers are studied and actual teaching content as found in current texts and courses of study is reviewed.

136 *Teaching English* (2 to 4) Lumsden

Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged.

Prerequisite*: eighteen semester hours in English.

* Prerequisite to all special methods courses: Education 109–10, 121–22, and 131. Additional prerequisites are stated under each course.

138 *Teaching Social Studies* (2 to 4) Root

Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged.

Prerequisite*: twenty-four semester hours of social studies.

140 *Teaching Mathematics* (3) Weida

Spring—late afternoon.

Prerequisite*: Mathematics through calculus.

144 *Teaching Science* (2 to 4) Rumbough

Spring: lecture (2 hours)—late afternoon, field work (2 hours)—as arranged.

Prerequisite*: twenty-four to forty semester hours of science.

146 *Teaching Foreign Languages* (2 to 4) Keating

Spring—late afternoon.

Prerequisite*: eighteen semester hours of one foreign language.

148 *Teaching Home Economics* (2) Kirkpatrick

Spring—as arranged.

Prerequisite*: thirty semester hours of Home Economics.

150 *Teaching Business Subjects* (2) Shott

Spring—as arranged.

Prerequisite*: thirty semester hours of business education.

Third Group†

205–6 *The Curriculum*‡ (3–3) Bish

Academic year—Saturday morning.

For experienced teachers. *First half:* curriculum foundations and issues; comparison of curriculum patterns. *Second half:* principles and procedures in curriculum development; group consideration of student problems.

207 *Curriculum Materials*‡ (3) Bish

Summer 1956.

For experienced teachers. The study and construction of courses of study, resource units, classroom teaching aids, and inexpensive materials; direct application to students' own situations.

* Prerequisite to all special methods courses: Education 100–10, 121–22, and 151. Additional prerequisites are stated under each course.
† A degree from an accredited institution is prerequisite to all third-group courses.
‡ Prerequisite: adequate professional preparation.

209 *Child Growth and Development* (3) LaBue

Fall—Saturday morning; summer 1956.

An interdisciplinary approach to child development taking into account such factors as society and culture, socialization, and socializing agents with particular emphasis on the home and school.

210 *Adolescent Growth and Development* (3) LaBue

Spring—Saturday morning.

A consideration of physical, intellectual, and cultural backgrounds of adolescence with particular emphasis on social development, adjustment to organized society, educational development and adjustment to school, and home relationships.

212 *Evaluation in Education* * (3) Ruffner

Spring—evening; summer 1956.

Concept of evaluation, relationship between evaluation of ends and means, steps involved in the evaluation of learning outcomes. As the course progresses each student develops solutions for evaluation problems related to his work situation.

213–14 *History of Education* (3–3) Jarman

Academic year—evening.

First half: the European backgrounds of American education. *Second half:* the evolution of the American school system.

215 *Education of the Exceptional* * (3) LaBue

Summer 1956.

For classroom teachers. A survey of current problems in the education and guidance of exceptional pupils. Nature and needs of those physically, mentally, or emotionally handicapped, needs of the gifted. Resources for help in correction, diagnosis, therapy, education, and guidance.

216 *Education of the Slow-Learner* * (3) LaBue

Not offered 1956–57.

Identification, nature, and needs of the slow-learner at the elementary and junior high school levels. Emphasis upon curriculum development designed for regular classroom teachers who must provide special methods and materials in the education and guidance of the slow-learner. Also of interest to special-class teachers and administrators.

217–18 *Contemporary Problems in Education* * (3–3) Jarman

Academic year—evening; summer 1956—Education 218 (3).

First half: designed to help students formulate a personal philosophy

* Prerequisite: adequate professional preparation.

of education. *Second half:* social foundations of education—a study of the forces that shape the policies and offerings of the school.

219 *Elementary School Classroom Procedures** (3) LaBue

Summer 1956.

Current classroom practices with particular emphasis on ways of planning, unit teaching, techniques in discipline; individual and group evaluation techniques, resources for learning, providing for individual differences.

220 *Intermediate Grade Education** (3)

Not offered 1956–57.

A study of the curriculum and methods of teaching in the intermediate grades, based upon a growing understanding of the child and his environment.

221–22 *Early Childhood Education** (3–3)

Not offered 1956–57.

For experienced teachers. *First half:* nursery school and kindergarten education. *Second half:* education in the primary grades.

223–24 *Reading Problems** (3–3) Coleman

Academic year—evening.

For experienced teachers. A clinical approach to reading difficulties on elementary and secondary school levels. Demonstrations and observations, with clinic cases.

225 *Elementary School Reading* (3) Coleman

Summer 1956.

Developmental and remedial approaches to reading problems. Demonstrations of diagnostic and corrective techniques used in the Reading Clinic.

227 *Basic Issues in Elementary Education* (3) LaBue

Fall—evening.

A consideration of basic issues in the purposes, organization, and conduct of elementary education. Emphasis on the philosophical and psychological roots of fundamental assumptions as they relate to classroom practices.

228 *Instructional Areas in Elementary Education* (3) LaBue

Spring—evening.

Critical appraisal of the objectives, organization, learning and experiences, and teaching methods in the six broad areas of instruction in the elementary school.

* Prerequisite: adequate professional preparation.

229 *Administration of Elementary Education* (3) LaBue

Summer 1956.

For experienced teachers and administrators. Administration as a means of achieving instructional objectives, organizing learning and teaching activities, handling supplies and equipment, maintaining the building, and integrating school and community life. Emphasis upon guide lines to action.

231 *Secondary School Classroom Procedures** (3) Bish

Fall—evening; summer 1956.

Survey of current classroom practices with particular attention to selected topics such as teacher-pupil planning, group procedures, pupil security, initiatory and culminating activities, individual and group evaluation techniques, teaching aids, etc.; review of recent literature.

233 *Audio-visual Education** (3) J. Johnson

Spring: lecture (2 hours), laboratory (2 hours)—Saturday morning.

Role of audio-visual materials in learning; selection, evaluation, and use of materials; administrative problems in the care, operation, maintenance, and use of audio-visual materials and equipment. Material fee, $7.

239 *Teaching the Core Curriculum** (3) Bish

Not offered 1956–57.

An examination and study of classroom teaching procedures appropriate to the core program.

241 *Education of the Gifted** (3)

Summer 1956.

For classroom teachers. Nature and discovery of giftedness; provisions for the gifted in regular classes; experimental projects.

243 *Human Relations in the Classroom** (3)

Summer 1956.

Principles and practices involved in interpersonal relationships between learner and teacher and among learners.

245 *School and Community** (3) Angel

Summer 1956.

The school as an important member of a team of social agencies that builds the community.

251 *Guidance in Secondary Schools** (3) Brougher

Fall—evening; summer 1956.

* Prerequisite: adequate professional preparation.

Scope; needs; organization of the program; services to students, the instructional staff, and the administration; personnel needed for the program.

254 *The Junior High School** (3) Bish, Root

Not offered 1956–57.

Purposes, organization, core programs, guidance, developing course of study, extra-classroom activities.

255–56 *Secondary Education** (3–3) Root

Academic year—evening; summer 1956.

First half: current proposals for the reorganization of secondary education. *Second half:* current problems in each of the subject-matter fields.

259–60 *Secondary School Management** (3–3) H. Johnson

Academic year—Saturday as arranged.

For experienced teachers and administrators with two years of successful teaching in secondary schools. Management planning, execution, and control; criteria of good management; construction of the master schedule; leadership problems incident to the development of new policies and programs.

263–64 *Employee Training* (3–3) Root

Academic year—evening.

First half: nature and purposes, organization and administration of programs—orientation, executive, supervisory, apprentice, clerical, skills: training media and techniques; coordination with other management functions. *Second half:* current practices, operating policies, and programs of selected organizations. Prerequisite: adequate professional preparation or two years of experience in employee training.

270 *Art Education* (3) Nowlin

Spring—evening.

For experienced teachers. Basic philosophies of modern art education; use of visual and tactile media; emphasis upon visual aids, displays, and use of community resources. Designed to increase awareness of the creative process. Prerequisite: Education 113.

271 *The Teacher and School Administration** (3) Fox

Fall—evening; Summer 1956.

A survey course for teachers and prospective administrators. Education and world affairs, national agencies, role of the state, local administration, school finance, legal controls, school plant, public support, democratic administrative procedures, improving teaching conditions.

* Prerequisite: adequate professional preparation

272 *The Teacher and School Supervision** (3) Lang

Spring—evening.

Nature, organization, human relationships, and techniques.

276 *Seminar: Public Relations in School Administration** (3) Root

Summer 1956.

Purposes, gathering materials, disseminating agencies, publicity media, public participation in policy making.

278 *School Law** (3) Remmlein

Not offered 1956–57.

Sources and scope of school law; legal rights and responsibilities of teachers, pupils, and taxpayers. Other legal problems of major interest to the group.

279–80 *Adult Education** (3–3) Ruffner

Academic year—evening; summer 1956—Education 280 (3).

First half: current concepts and objectives, agencies involved, programs on all levels—international through community. *Second half:* the adult as a learner, the teacher of adults, learning-teaching activities, administration of adult education programs.

281 *Group Procedures in Education** (3) Ruffner

Fall—evening; summer 1956.

Theory, practice, evaluation, and application to all educational levels.

285 *Extra-classroom Activities** (3) Root

Not offered 1956–57.

Nature and purposes of selected activities—homeroom, clubs, assemblies, school publications, student council, interscholastic contests; particular attention to sponsorship, participation, finance, and evaluation.

287–88 *Clinical Study of Reading Problems** (3–3) Coleman

Academic year—Saturday morning.

For advanced students. Diagnostic and corrective work under supervision in the Reading Clinic. Each student is expected to diagnose and treat pupils who are retarded in reading. Case studies are presented and criticized. Education 287; material fee, $7. Prerequisite: Education 223–24 or the equivalent.

289–90 *Supervisory Problems in Reading** (3–3) Coleman

Not offered 1956–57.

* Prerequisite: adequate professional preparation.

For experienced teachers, principals, supervisors, and superintendents. Considers the problems involved in planning, reorganizing, and improving the total reading program, in promoting cooperative effort on the part of the staff toward increasing teaching efficiency.

291 *Planning the School Plant* (3) Hamon

Not offered 1956–57.

Selection of sites; evaluation of existing buildings; utilization of present facilities; adaptation to curricular needs; building, operation, and maintenance problems.

293–94 *Research* (3–3) The Staff

Academic year—as arranged.

Individual research under the guidance of a member of the staff. Program and conferences arranged with an instructor.

295 *Educational Research Methods and Procedures* (3) Fox, LaBue

Fall—late afternoon; spring—late afternoon; summer 1956.

Required of all Master of Arts candidates following Plan 2. Knowledge of elementary statistics required.

297 *Reading in Education* The Staff

Fall—late afternoon; spring—late afternoon; summer 1956.

To assist those preparing for the comprehensive examination. No credit toward degree requirements. Tuition fee, $16.50.

299–300 *Thesis* (3–3) The Staff

Academic year—as arranged; summer 1956.

Required of all Master of Arts candidates following Plan 1.

ELECTRICAL ENGINEERING

*Norman Bruce Ames, M.S., E.E., LL.B., *Professor of Electrical Engineering*

Ernest Frank, B.E.E., M.S. in E.E., Ph.D., *Associate Professor of Electrical Engineering, Executive Officer*

Forest Klaire Harris, Ph.D., *Professorial Lecturer in Electrical Engineering*

Donald Joseph Hanrahan, B.E.E., *Assistant Professor of Electrical Engineering*

Dwight Edward Shytle, *Lecturer in Electrical Engineering*

William Herbert Gossard, A.B., M.S. in E.E., *Lecturer in Electrical Engineering*

William Walter Balwanz, B.E.E., M.S. in E.E., *Lecturer in Electrical Engineering*

Ralph Siegel, B.S. in E.E., *Lecturer in Electrical Engineering*

Bachelor of Electrical Engineering (School of Engineering).—See pages 138–41 and 142 for statement of requirements.

Master of Science in Engineering (School of Engineering).—See pages 147–48 for statement of requirements.

Electrical Engineer (School of Engineering).—See page 150 for statement of requirements.

First Group

11 *Fundamentals of Electrical Engineering* (3) The Staff

Fall—morning and evening.

D-C circuit analysis; electric and magnetic fields; materials; magnetic circuits; magnetic forces and magnetically generated voltages. Prerequisite: Physics 7; prerequisite or concurrent registration: Mathematics 20.

12 *Electric Machinery* (3) The Staff

Spring—morning and evening.

Principles of electric-mechanical energy conversion; theory of D-C, synchronous, poly-phase induction; and single-phase machines and transformers. Prerequisite: Electrical Engineering 11.

Second Group

107 *Alternating-Current Circuits* (3) Hanrahan

Fall—morning and evening.

*On leave of absence 1956–57.

Theory of linear, lumped-parameter circuits; sinusoidal and non-sinusoidal excitations. Prerequisite: Electrical Engineering 11.

109 *Alternating-Current Machinery* (3) Hanrahan, ———

Fall—morning and evening.

Advanced topics in machine analysis: 2-reaction theory, harmonics, transients, and dynamics, control generators and self-synchronous machines. Prerequisite: Electrical Engineering 12; prerequisite or concurrent registration: Electrical Engineering 107.

110 *Communication Engineering* (3) Hanrahan

Spring—morning and evening.

Theorems and concepts in communication engineering and their application to representative problems. Prerequisite: Electrical Engineering 107.

111–12 *Electrical Measurements* (2–2) Harris

Academic year—morning and evening.

Theory of D-C and A-C indicating instruments, bridges, and meters. Prerequisite or concurrent registration: Electrical Engineering 107.

113–14 *Electric Power Laboratory* (2–2) The Staff

Academic year—morning and evening.

Experiments in D-C and A-C circuits, instruments, and machines. Prerequisite: Electrical Engineering 12. Laboratory fee, $11 a semester.

123 *Communications Laboratory I* (2) The Staff

Fall—morning and evening.

A laboratory course associated with Electrical Engineering 110. Prerequisite or concurrent registration: Electrical Engineering 110. Laboratory fee, $11.

124 *Communications Laboratory II* (2) The Staff

Spring—morning and evening.

A laboratory course associated with Electrical Engineering 136. Prerequisite or concurrent registration: Electrical Engineering 136. Laboratory fee, $11.

127 *Electric Transients* (3) Hanrahan

Fall—morning and evening.

Solution of compound, switching, and transition transients by classical methods and by use of the Laplace transform. Prerequisite: Physics 105 or Electrical Engineering 107; Mathematics 103 or 132.

128 *Control System Analysis* (3) Hanrahan

Spring—morning and evening.

Transient analysis of control systems; transfer functions and analysis of performance; introduction to design of control systems; compensation. Prerequisite: Electrical Engineering 127.

131–32 *Electric Power Systems* (2–2) Siegel

Academic year—evening.

Theory and application of symmetrical components; transmission lines and electric distribution; system stability and protection. Prerequisite: Electrical Engineering 109.

135 *Field Theory I* (3) Balwanz

Fall—evening.

Theory of electromagnetic fields and use of vector analysis. Prerequisite: Electrical Engineering 110; Mathematics 103; Physics 8.

136 *Field Theory II* (3) Balwanz

Spring—evening.

Theory of transmission at UHF and VHF, including wave guides and methods of generation at these frequencies. Prerequisite: Electrical Engineering 135; Physics 132.

137 *Applied Electronics* (3) The Staff

Fall—evening.

Illustrative applications of electronic devices; steady-state and transient solutions of active networks with linear elements and the steady-state solution of active networks containing non-linear elements. Prerequisite: Electrical Engineering 110 and 127; Physics 132.

189–90 *Proseminar in Electrical Engineering* (1–1) The Staff

Academic year—evening.

Prerequisite: senior status.

Third Group

201 *Radio Wave Propagation* (3) Balwanz

1957–58 and alternate years.

Theory of the radiation and propagation of electromagnetic waves in space, with consideration of practical application to radio problems.

202 *Microwave Electronics* (3) Balwanz

1957–58 and alternate years.

Behavior of vacuum tubes at ultra-high frequencies. Theory and

applications of micro-wave oscillators and transmission circuits. Measurement problems.

203 *Operational Analysis of Linear Systems* (3) Frank

1956–57 and alternate years: fall—evening.

Analysis of circuits under steady-state and transient conditions by operational methods. Generality of the circuit concept.

206 *Electronic Circuit Problems* (3) ———

1956–57 and alternate years: spring—evening.

Analysis and design of low power vacuum tube and transistor circuits: amplifier, oscillators, detectors, modulators, receivers, counters, timers, theory of measurements, non-linear analysis.

299–300 *Thesis* (3–3) The Staff

Academic year—as arranged.

ENGLISH

Robert Whitney Bolwell, Ph.D., *Professor of American Literature*
Ernest Sewall Shepard, A.M., *Professor of English Literature*
Fred Salisbury Tupper, Ph.D., *Professor of English Literature*
Calvin Darlington Linton, Ph.D., *Professor of English Literature*
Charles William Cole, Ph.D., *Professor of American Literature, Executive Officer*
William Lewis Turner, Ph.D., *Associate Professor of English*
Robert Hamilton Moore, Ph.D., *Associate Professor of English Composition*
Averett Howard, A.M., *Associate Professor of English Composition*
Muriel Hope McClanahan, Ph.D., *Associate Professor of English Composition*
James Harold Coberly, Ph.D., *Associate Professor of American Literature*
Philip Highfill, Jr., Ph.D., *Associate Professor of English Literature*
John Gage Allee, Jr., Ph.D., *Associate Professor of English*
John Palmer Reesing, Jr., Ph.D., *Assistant Professor of English*
Mary Jane Cook, A.M., *Instructor in English Composition*
Roy Clay Putman, A.M., *Instructor in English Composition*
Richard Bruce Erno, A.M., *Instructor in English*
Robert Elemer Gajdusek, A.M., *Instructor in English*
Marilyn Buehrer Saveson, Ph.D., *Instructor in English Composition*
Elizabeth Truman Wright, A.M., *Instructor in English Composition*

Bachelor of Arts with a major in American Thought and Civilization (Columbian College—Field-of-Study).—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 66.

Required: the general requirements stated on pages 82–87 and the grade "pass" on the American Thought and Civilization major examination at the end of the senior year. The coordinated field of knowledge upon which the student will be examined is summarized under four general headings: (1) European cultural history—the Renaissance and modern social and intellectual cultures as a background to contemporary civilization with particular attention to English literature and history from the 16th through the 19th centuries; (2) American history —the political, economic, social, and religious thought and experience of the American people; (3) American philosophy and fine arts—a survey of periods and movements with a knowledge of outstanding individuals; (4) American literature—a knowledge of major writers, together with a study of poetry, fiction, and drama. The Department of English provides a proseminar (English 170–80) intended to assist the student in preparing himself for the major examination. The major adviser will give to each student at registration a check list of available courses grouped as prerequisite, necessary, or desirable for the completion of the major study program.

Bachelor of Arts with a major in English Literature (Columbian College—

Field-of-Study).—Prerequisite: the Arts and Letters curriculum in the Junior College described on page 66. It is recommended that prospective majors elect English 91–92 from among the listed offerings.

Required: the general requirements stated on pages 82–87, and the passing of the English Literature major examination at the end of the senior year. The field of coordinated knowledge upon which the student will be examined at the end of his senior year is summarized under the following general headings: (1) the history of English literature from the Anglo-Saxon period; (2) the chief English writers (a certain familiarity with each man and his main works and a detailed knowledge of Shakespeare); (3) English social and political history as it bears upon or is reflected in the literature; (4) European intellectual backgrounds and movements which have affected English literature. The proportion of work taken in each of these areas should be worked out by the student in consultation with one of the English Literature advisers. The Department of English provides a proseminar (English 199–200) to assist the student in preparing himself for the major examination. A detailed description of the major is available in the office of the Dean of Columbian College.

Master of Arts in the field of American Literary and Cultural History (Columbian College).—Prerequisite: the equivalent of an undergraduate major in this University in (1) History (with American history as a major part), (2) American Thought and Civilization, or (3) English Literature (with introductory courses in American literature and American history). The student who has not taken any of the above majors at this University must take a candidacy examination.

Required: in addition to the general requirements stated on pages 89–92, the following specific requirements must be met: twelve of the required semester hours must be of seminar study, six in American history and six in American literature; twelve of the required semester hours must be of second and third group courses in the fields of American history, literature, philosophy, education, and art recommended by the adviser; a thesis (six semester hours) in any of the foregoing fields or in some combination of them. Because of the various undergraduate majors which will be accepted for admission to this program, a basic reading list is assigned to all students, to assist in preparing them for the final Master's examination.

Master of Arts in the field of English and American Literature (Columbian College).—Prerequisite: an undergraduate major in English Literature, or American Thought and Civilization at this University; or twenty-four semester hours in English and/or American literature above the sophomore level. The student who has not taken either of the above majors at this University must take a candidacy examination. The student offering split preparation (English and American literature) will be examined in English and American literature.

Required: in addition to the general requirements stated on pages 89–92, the following specific requirements must be met: (1) a schedule of courses amounting to twenty-four semester hours, planned in consultation with the adviser, on the basis of the student's undergraduate preparation, to include a comprehensive survey of American literature and of English literature from 1600; (2) a Master's thesis (six semester hours) written upon an approved topic under the direction of the instructor in whose field the major portion of the material falls; (3) a final written examination, on American literature and on English literature from 1600.

Master of Arts in the field of English Literature (Columbian College).—Prerequisite: an undergraduate major in English Literature at this University, or twenty-four semester hours in English literature above the sophomore level. The student who has not passed the major examination in English at this University

must take a candidacy examination which, in its scope and difficulty, is comparable to the major English examination.

Required: in addition to the general requirements stated on pages 89–92, the following specific requirements must be met: (1) a schedule of courses amounting to twenty-four semester hours, planned in consultation with the adviser; (2) a Master's thesis (six semester hours) written upon an approved topic under the direction of the instructor in whose field the material falls; and (3) a final written examination.

Doctor of Philosophy (Graduate Council).—See page 97.

Bachelor of Arts in Education with a teaching field in English (School of Education).—Prerequisite: the Education curriculum, page 68.

Required: the English option, page 168; and the professional courses listed on page 172.

ENGLISH COMPOSITION

First Group

A *English Practice* (3) — The Staff

Fall—as arranged; spring—as arranged; summer 1956.

Instruction, drill, and exercises in grammar, vocabulary, spelling, and mechanics in general; instruction and exercises in composition and reading. This course is designed to prepare students for English 1.

B *English for Foreign Students* (3) — Allee

Fall—morning and evening; spring—morning and evening; summer 1956.

A course in reading and writing designed to prepare the student for English 1. Special attention is given to spelling, syntax, grammar, idiom, and vocabulary.

1 *English Composition** (3) — Moore and Staff

Fall—morning and evening; spring—morning and evening; summer 1956.

Review of grammar, exercises in composition, readings.

2 *English Composition** (3) — Moore and Staff

Fall—morning and evening; spring—morning and evening; summer 1956.

* Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those students who show marked superiority may, upon passing further tests, be exempted from one or both halves of the English Composition course; those who are inadequately prepared for English 1 will be assigned to English A.

All pre-Columbian College students (who are required to take one year of English composition and one year of literature in English, Classical Languages, French, German, or Spanish) will follow the sequence of English 1, both semesters of one of the introductory literature courses, and English 4.

English 1 is prerequisite to all other courses in English. English 2 is the second half of the six-hour composition course requirement of students not required to follow the pre-Columbian College sequence.

Exercises in composition, readings. The second half of the six-hour English Composition course required of all students not in the pre-Columbian College curricula.

4 *English Composition** (3) Moore and Staff

Fall—morning and evening; spring—morning and evening; summer 1956.

A course in critical analysis and practice of expository and argumentative techniques and in research procedure. The second half of the six-hour English Composition course required of students in the pre-Columbian College curricula. Prerequisite: English 1 and both semesters of one of the introductory literature courses.

11 *The Writing of Reports* (3) Turner and Staff

Fall—morning and evening; spring—morning and evening; summer 1956.

Theory and practice in the writing of technical reports. Prerequisite: English 1, and 2 or 4.

Second Group

109 *Expository Writing* (3) Howard and Staff

Fall—evening.

A study of types of expository writing with weekly exercises. Prerequisite: English 1, and 2 or 4.

110 *Narrative Writing* (3) Putman

Spring—evening.

Study of the techniques of narrative writing and class criticism of student writing. Prerequisite: English 1, and 2 or 4.

115 *The Writing of Fiction—the Short Story* (3) Putman

Fall—evening.

Prerequisite: English 110; consent of instructor.

116 *Advanced Exposition* (3) Moore

Spring—evening.

Theory and practice in the writing of expository articles and essays. Prerequisite: English 109; consent of instructor.

117–18 *The Writing of Fiction—the Novel* (3–3) Howard

Academic year—evening.

Writing a novel. Prerequisite: English 110; consent of instructor.

* See footnote on page 297.

ENGLISH LITERATURE

First Group

51–52 *Introduction to English Literature** (3–3) — Tupper and Staff

Academic year—morning, afternoon, and evening; summer 1956.

A historical survey. Prerequisite: English 1.

91–92 *Introduction to European Literature** (3–3) — Shepard and Staff

Academic year—morning and evening.

Consideration of various types. Prerequisite: English 1.

Second Group*

121–22 *English Literature from the Beginnings to 1500* (3–3) — Allee

Academic year—morning.

First half: English literature prior to Chaucer. *Second half:* Chaucer.

125 *The Evolution of Modern Speech* (3) — Allee

Not offered 1956–57.

The development of the English language in a historical treatment of English grammar.

129–30 *Elizabethan Nondramatic Literature* (3–3) — Tupper

Academic year—morning.

Nondramatic literature from 1485 to 1601.

135–36 *Shakespeare* (3–3) — Tupper

Academic year—morning; summer 1956—English 135 (3).

139–40 *The Seventeenth Century* (3–3) — Linton

First half: not offered 1956–57. *Second half:* spring—evening; summer 1956.

First half: poetry and prose from 1603 to 1660. *Second half:* Milton.

* All pre-Columbian College students (who are required to take one year of English composition and one year of literature in English, Classical Languages, French, German, or Spanish) will follow the sequence of English 1, both semesters of one of the introductory literature courses, and English 4.

English 51–52, 71–72, 91–92, Classical Languages and Literatures 71–72, French 51–52, German 51–52, or Spanish 51–52 is prerequisite to all second-group courses except English 125.

141–42 *The Neoclassical Movement* (3–3) Highfill

Academic year—morning; summer 1956—English 141 (3).

Poetry and prose from 1660 through the mid-eighteenth century.

151–52 *The Romantic Movement* (3–3) Reesing

Academic year—morning.

From the mid-eighteenth century through Shelley and Keats.

161–62 *Victorian Literature* (3–3) Shepard

Academic year—evening.

Poetry and prose from 1830 to 1900.

165–66 *The Twentieth Century* (3–3) Linton

Academic year—morning; summer 1956—English 165 (3).

British poetry, prose, and drama since 1900.

181–82 *The English Novel* (3–3) Reesing

Academic year—evening.

Major English novelists from the eighteenth century to the present day.

183–84 *The English Drama* (3–3) Highfill

Academic year—evening.

First half: concerned principally with the drama of Shakespeare's contemporaries. *Second half:* a historical survey from 1660 to the present day.

199–200 *Proseminar: Readings for the English Literature Major* (3–3) Tupper, Highfill

Academic year—afternoon and evening.

Conferences and group discussions.

THIRD GROUP

223–24 *Old English* (3–3) Allee

Academic year—evening.

English language and literature before 1100. *First half:* Old English grammar and readings. *Second half:* Beowulf.

235–36 *Studies in Shakespeare and His Contemporaries* (3–3) Tupper

Not offered 1956–57.

Prerequisite: English 135–36.

239–40 *Studies in Seventeenth Century Literature* (3–3) Linton

First half: fall—evening. *Second half:* not offered 1956–57.

Open to qualified undergraduates. *First half:* chief figures exclusive of Milton. *Second half:* Milton.

241–42 *Studies in Neoclassical Literature* (3–3) Highfill

Not offered 1956–57.

Prerequisite: English 141–42.

251–52 *Studies in the Romantic Movement* (3–3) Reesing

First half: spring—evening. *Second half:* not offered 1956–57.

Prerequisite: English 151–52.

261–62 *Studies in Victorian Literature* (3–3) Shepard

Academic year—evening.

Prerequisite: English 161–62.

265–66 *Studies in Twentieth Century Literature* (3–3) Linton

Not offered 1956–57.

Eliot and his contemporaries.

295–96 *Studies in the History of English Literary Criticism* (3–3) Shepard

Summer 1956—English 295 (3).

Open to undergraduates with the approval of the instructor.

299–300 *Thesis* (3–3) The Staff

AMERICAN LITERATURE

First Group

71–72 *Introduction to American Literature** (3–3) Bolwell and Staff

Academic year—morning and evening; summer 1956.

A historical survey. *First half:* from the beginnings to the Civil War. *Second half:* from Civil War to the present. Prerequisite: English 1.

* All pre-Columbian College students (who are required to take one year of English composition and one year of literature in English, Classical Languages, French, German, or Spanish) will follow the sequence of English 1, both semesters of one of the introductory literature courses, and English 4.

English 51–52, 71–72, 91–92, Classical Languages and Literatures 71–72, French 51–52, German 51–52, or Spanish 51–52 is prerequisite to all second-group courses except English 171–72.

Second Group*

171–72 *Studies in American Literature* (3–3) — Cole

Academic year—evening.

Major factors in the national cultural tradition as shown by outstanding writers. Prerequisite: English 51–52 or 71–72.

173–74 *Major American Poets* (3–3) — Coberly

Academic year—morning; summer 1956—English 174 (3).

Advanced critical study of significant writers and movements. *First half:* from beginnings through nineteenth century. *Second half:* the twentieth century.

175–76 *American Drama* (3–3) — Bolwell

Academic year—morning; summer 1956—English 176 (3).

Historical and critical study of significant plays and forms. *First half:* from beginnings through nineteenth century. *Second half:* the twentieth century.

177–78 *American Fiction* (3–3) — Coberly

Academic year—evening.

Historical and critical study of significant novels and short stories. *First half:* from beginnings through nineteenth century. *Second half:* the twentieth century.

179–80 *Proseminar: Readings for American Thought and Civilization Major* (3–3) — The Staff

Academic year—as arranged.

Conferences and group discussions.

Third Group

271–72 *Seminar: American Literature* (3–3) — Bolwell

Academic year—as arranged.

Prerequisite: English 171–72 or the equivalent.

277–78 *Studies in American Fiction* (3–3) — Coberly

Academic year—evening; summer 1956—English 277 (3).

Topic: Nineteenth Century Transcendentalism. Prerequisite: English 177–78 or the equivalent. Open to the undergraduate with the approval of the instructor.

* English 51–52, 71–72, 91–92, Classical Languages and Literatures 71–72, French 51–52, German 51–52, or Spanish 51–52 is prerequisite to all second-group courses in English except English 171–72.

279–80 *Thesis* (3–3) The Staff

Related Courses in Other Departments

Education 136, *Teaching English*
History 151–52, *English History*
Philosophy 111–12, *History of Philosophy*

GEOGRAPHY

Robert Dale Campbell, Ph.D., *Professor of Geography, Executive Officer*

Harland Walter Westermann, A.M., *Assistant Professor of Geography*

Richard Ernest Murphy, A.M., *Assistant Professor of Geography*

Bachelor of Arts with a major in Geography (Columbian College—Departmental).—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 66. It is strongly recommended that this curriculum include: Botany 1, 2; Economics 1–2; History 71–72, and Statistics 91–92. Electives must include Geography 51 and 52.

Required: in addition to the general requirements as stated on pages 82–87, twenty-four semester hours of Geography beyond first-group courses, including Geography 103–4, 113, and 114; fifteen semester hours in one or more of the following departments: Botany, Geology, Economics, History, Political Science.

Master of Arts in the field of Geography (Columbian College).—Prerequisite: the degree of Bachelor of Arts with a major in Geography from this University, or the equivalent.

Required: the general requirements as stated on pages 89–92. The thirty hours of required work must include Geography 201–2 and 299–300.

Bachelor of Arts in Education with a teaching field in Geography (School of Education).—Prerequisite: the Education curriculum, page 68

Required: the Geography option, pages 168–69; and the professional courses listed on page 172.

Doctor of Philosophy (Graduate Council).—See page 97.

First Group

51 *Introduction to Geography* (3) Campbell, Westermann

Fall—morning; spring—evening; summer 1956.

A study of place attributes and characteristics; patterns and associations of physical and cultural earth features.

52 *World Regions* (3) Campbell, Westermann

Fall—evening; spring—morning; summer 1956.

The analysis of world regional divisions; description and interpretation of physical-cultural complexes; evaluation of regional differences as they affect the distribution and activities of man.

Second Group

103–4 *Cartography* (3–3) Westermann

A year course: credit is not given for the first half until the second half is completed.

Academic year—Saturday.

Principles of cartographic drafting; elementary map projections; map and graph planning, design, and construction; uses and interpretation of maps. Prerequisite: Geography 51 and 52. Laboratory fee, $11 a semester.

113 *Geomorphology* (3) Murphy

Spring: lecture—afternoon, laboratory—as arranged.

The nature and evolution of earth forms, with special emphasis upon relief features of North America. Prerequisite: Geography 51.

114 *Weather and Climate* (3) Murphy

Fall: lecture—afternoon, laboratory—as arranged.

Rudimentary atmospheric physics, air mass and frontal weather analysis, regional climatology. Prerequisite: Geography 51.

125 *Economic Geography: Trade and Transportation* (3)

1957–58 and alternate years.

The influence of geographic factors on the forms of transportation and upon trade routes and centers.

126 *Economic Geography: Raw Materials* (3)

1957–58 and alternate years.

Location and utilization of raw materials essential to modern technology; position of the United States with regard to such materials.

127 *Economic Geography: Manufacture* (3) Westermann

Fall—evening.

Location and distribution of manufactural industries; analysis of the factors determining both; internal structures and external relationships of selected industries.

128 *Economic Geography: Agriculture** (3) Westermann

1956–57 and alternate years: spring—evening.

Analysis of types and distribution of agricultural practices; crop ecology; character of predominantly agricultural economies.

131 *Conservation of Natural Resources** (3) Murphy

1956–57 and alternate years: fall—evening.

Principles and problems of conservation of vital natural resources: soils, water, forests, minerals, fuels, wildlife. Prerequisite: Geography 51 and 52.

* The following courses are strongly recommended for students particularly interested in land use, agricultural geography, and conservation: Botany 141–42, *Plant Ecology*; 143, *Introduction to Plant Geography*; 144, *The Vegetation of North America*, and 161, *Soils*.

132 *Land Use** (3) Murphy

1956–57 and alternate years: spring—evening.

Principles of geographic area analysis and land planning. Prerequisite: Geography 51 and 52.

141 *Geography of Settlement* (3)

1957–58 and alternate years.

The study of the nature and form of settlement, and of population trends and patterns. (Sociology 141, *Population and Migration*, is strongly recommended as an elective for students particularly interested in demography.)

142 *Urban Geography* (3)

1957–58 and alternate years.

Location, form, and function of cities. (Sociology 126, *Urban Sociology*, is strongly recommended as an elective for students particularly interested in urban studies.)

145 *World Cultural Geography* (3) Koenig

Fall—afternoon; spring—afternoon.

Cultural variations from place to place on the surface of the earth; their development; cultural aspects of regional personality.

151 *Economic Geography of the United States* (3) Murphy

Fall—morning.

The bases of regional economic development; character of the economic structure of the United States and its relationship with other areas of the world.

152 *Political Geography of the United States* (3) Murphy

Spring—morning.

The basis of political "regionalism" within the United States and of our political relationships with other nations.

171 *Field Geography* (3) Westermann

Summer 1956.

Field study methods, training in mapping and analysis techniques for both rural and urban areas. Prerequisite: Geography 51 and 52. Transportation fee, $18.

174 *Map Interpretation* (3)

Not offered 1956–57.

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* See footnote page 104.

Map elements and uses, map reading, interpretation and evaluation of maps. Prerequisite: Geography 103–4.

183 *Northwest Europe** (3) Campbell

1956–57 and alternate years: fall—morning.

184 *The Mediterranean** (3) Campbell

1956–57 and alternate years: spring—morning.

185 *Africa** (3)

Not offered 1956–57.

186 *The Middle East** (3)

Not offered 1956–57.

191 *Middle America** (3) Murphy

1957–58 and alternate years.

192 *South America** (3)

1957–58 and alternate years.

195 *Eastern and Southeastern Asia** (3)

1957–58 and alternate years.

196 *Soviet Union** (3)

1957–58 and alternate years.

197 *The Pacific** (3) Westermann

Not offered 1956–57.

198 *Australia** (3) Westermann

Not offered 1956–57.

Third Group†

201–2 *Seminar: History and Philosophy of Geography* (3–3) Campbell

A year course: credit is not given for the first half until the second half is completed.
Academic year—evening.

231–32 *Seminar in Geography* (3–3)

Summer 1956—Geography 231 (3).

* Regional survey. No prerequisite. For students particularly interested in the study of specific regions regional courses in the departments of Economics, History, and Political Science are strongly recommended; for example: Economics 185–6, *Economic History and Problems of South America*; History 161, *South America Since Independence*; and Political Science 176, *Recent Trends in Latin American Politics and Government*.

† Senior major or graduate status is required in all third-group courses.

251–52 *Seminar: World Problem Areas—the Rim Lands* (3–3) Murphy

Academic year—evening.

First half: the Middle East. *Second half:* Southeast Asia.

295–96 *Research* (3–3) The Staff

Academic year—as arranged.

Special directed studies.

299–300 *Thesis* (3–3) The Staff

Course Offered in Special Program

In addition to the regular courses announced above, the University offers the following course especially for students enrolled in the Engineering Administration program.

271 *Engineering Geography* (3)

GEOLOGY

_____, *Associate Professor of Geology*
_____, *Professorial Lecturer in Geology*

Bachelor of Arts or *Bachelor of Science with a major in Geology (Columbian College—Departmental).*—Prerequisite: the Arts and Letters or the Science curriculum, respectively, in the Junior College, pages 66–67. Required: Chemistry 11–12 and 21; Physics 5, 6, 7, and 8, and eighteen semester hours in Geology beyond the first-group courses.

Master of Arts or *Master of Science in the field of Geology (Columbian College).*—Prerequisite: the degree of Bachelor of Arts or Bachelor of Science, respectively, with a major in Geology from this University, or the equivalent. Required: the general requirements as stated on pages 89–92.

First Group

21–22 *General Introductory Geology* (3–3)

Academic year: lecture (2 hours), laboratory or field trip (3 hours)—morning.

Survey course covering the principles of physiography, geology, and mineralogy. Laboratory fee, to be announced.

51–52 *Paleontology and Stratigraphy* (3–3)

Not offered 1956–57.

Lectures and laboratory work on classification and structure of fossil invertebrates, vertebrates, and plants, including their use as guide fossils in stratigraphic geology.

Second Group

111 *Mineralogy* (3)

Not offered 1956–57.

Identification, analysis, and classification of minerals. Lectures and laboratory.

122 *Structural Geology* (3)

Not offered 1956–57.

Interpretation of geological formations on the basis of their structures. Lectures and field work.

131 *Economic Geology* (3)

Not offered 1956–57.

Economic aspects of geological structures and compositions with particular reference to the raw materials necessary to modern civilization

142 *Geomorphology* (3)

Not offered 1956–57.

The nature and evolution of earth forms.

151 *Crystallography* (3)

Not offered 1956–57.

Elements of crystal structure.

162 *Regional Geology* (3)

Not offered 1956–57.

Lectures and map work on the physiographic regions of the Western Hemisphere.

THIRD GROUP

212 *X-ray Mineralogy* (3)

Spring—evening.

The structure of minerals as determined by the X-ray method.

215–16 *Seminar* (3–3)

Academic year—evening.

Detailed study of some phase of geology with review of current literature.

251 *X-ray Crystallography* (3)

Fall—evening.

Structure of crystals as determined by the X-ray method.

295–96 *Research* (arr.)

Not offered 1956–57.

Original work on individual problems.

299–300 *Thesis* (3–3)

Not offered 1956–57

GERMANIC LANGUAGES AND LITERATURES

Gretchen Louisa Rogers, Ph.D., *Associate Professor of German*

Wolfram Karl Legner, Ph.D., *Associate Professor of German, Executive Officer*

James Cecil King, Ph.D., *Assistant Professor of German*

Bachelor of Arts with a major in Germanic Languages and Literatures (Columbian College—Departmental).—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 66.

Required: in addition to the general requirements as stated on pages 82–87, German 51–52 and eighteen additional semester hours in German courses above the first group; History 39–40 or the equivalent; six semester hours in Philosophy selected with the approval of the adviser.

Master of Arts in Germanic Languages and Literatures (Columbian College).—Prerequisite: a Bachelor of Arts degree with a major in Germanic Languages and Literatures from this University, or the equivalent.

Required: the general requirements as stated on pages 89–92. The thirty hours of required work must include a thesis in the field of German literature or linguistics; a reading knowledge of French.

Bachelor of Arts in Education with a teaching field in German (School of Education).—Prerequisite: the Education curriculum, page 68.

Required: the German option, page 169, and the professional courses listed on page 172.

First Group

1–2 *First-year German* (3–3) The Staff

A year course: credit is not given for the first half until the second half is completed.

Academic year—morning and evening; summer 1956.

The essentials of German grammar; translation of easy prose.

3–4 *Second-year German* (3–3) The Staff

A year course: credit is not given for the first half until the second half is completed.

Academic year—morning and evening; summer 1956.

Selections from modern German prose; review of grammar, prerequisite: German 1–2 or two years of high school German.

9–10 *German Conversation and Composition* (3–3) Rogers

Academic year—morning.

49 *German Readings for Non-major Students* (3) Legner

Fall—Saturday morning; spring—evening; summer 1956.

Primarily for graduate students preparing for reading examinations. Undergraduates admitted with permission of the instructor. No academic credit for graduate students.

51–52 *Introduction to German Literature* (3–3) King

Academic year—morning.

Prerequisite: German 4 or the equivalent.

SECOND GROUP

103 *Goethe's "Faust"—Part I* (3) Legner

Fall—evening.

128 *History of German Literature from the Beginnings to the Age of Enlightenment* (3) Legner

Spring—evening.

131–32 *History of German Literature in the Eighteenth Century* (3–3) Rogers

Not offered 1956–57.

The age of Lessing, Goethe, and Schiller.

141–42 *History of German Literature in the Nineteenth Century* (3–3) King

Not offered 1956–57.

Romanticism, realism, and naturalism.

151–52 *Twentieth Century German Drama and Fiction* (3–3) Rogers

Academic year—evening.

THIRD GROUP

201–2 *Middle High German* (3–3) Legner

Not offered 1956–57.

299–300 *Thesis* (3–3) The Staff

HISTORY

Elmer Louis Kayser, Ph.D., LL.D., *Professor of European History*
Wood Gray, Ph.D., *Professor of American History*
Howard Maxwell Merriman, Ph.D., *Professor of American Diplomatic History, Executive Officer*
Myron Law Koenig, Ph.D., *Professor of American History*
*Roderic Hollett Davison, Ph.D., *Professor of European History*
William Columbus Davis, Ph.D., *Associate Professor of Latin American History*
Roland Bettes Thompson, Ph.D., *Associate Professor of European History*
Richard Catlin Haskett, Ph.D., *Assistant Professor of American History*

Bachelor of Arts with a major in History (Columbian College—Field-of-Study).—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 66. Electives must include History 39–40 and 71–72.

Required: the general requirements as stated on pages 82–87 and the grade of "pass" on the History major examination at the end of the senior year.

The major, centered on the study of the rise, development, and spread, and the continuing challenges of Western civilization, is attested by a major examination. Under the guidance of an adviser the student will arrange his program in History to attain a balanced coverage of (1) the rise of civilization in Europe to the eve of the French Revolution, (2) the spread of Western culture throughout the world since the close of the fifteenth century, (3) the historic problems of modern industrial civilization from the beginnings of the Industrial Revolution, and (4) the relations of the major nations of Europe and America in their world setting since the Napoleonic Wars. A six-hour research seminar to give training in fundamental techniques is a required part of each major's program, and a proseminar (History 199–200) is offered as a means of integrating the student's understanding of the continuity of Western civilization. For details relating to the administration and content of the major, see the pamphlet on this subject, which is available in the offices of the Dean of Columbian College and the Executive Officer of the History Department.

Bachelor of Arts with a major in Latin American Civilization (Columbian College—Field-of-Study).—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 66.

Required: the general requirements as stated on pages 82–87 and the grade of "pass" on the Latin American Civilization major examination at the end of the senior year. The coordinated field of knowledge upon which the student will be examined includes the political and social history, the economic development, the governmental structures and international relations, and the principal literary works and writers of the Latin American republics. The Department of History provides a proseminar (History 197–98) intended to assist the student in preparing himself for the major examination. For further details, see the pamphlet, which is available in the Office of the Dean of Columbian College.

* On sabbatical leave fall semester 1956–57.

Master of Arts in the field of History (Columbian College).—Prerequisite: the degree of Bachelor of Arts with a major in History from this University, or the equivalent, and the approval of the Department.

Required: the general requirements for the degree, as stated on pages 89–92. Of the twenty-four semester hours of required second- and third-group courses (exclusive of the thesis), at least six must be in third-group history courses; a maximum of six may be in a closely related field outside the Department of History as approved by the Department. Master's candidates are responsible for arranging with instructors of second-group courses for extra work, in order to receive graduate credit for such courses.

Master of Arts in the field of Latin American Civilization (Columbian College).—Prerequisite: the degree of Bachelor of Arts with a major in Latin American Civilization from this University, or the equivalent, and the approval of the Committee on Latin American Civilization.

Required: the general requirements for the degree, as stated on pages 89–92. Course work and the comprehensive examinations will embrace political and social history, governmental structures and international relations, economic development, and principal literary works of Latin America. The thesis may be written in any one of these four fields. All courses must be approved in advance by the Adviser.

Doctor of Philosophy (Graduate Council).—See page 97.

Bachelor of Arts in Education with a teaching field in History (School of Education).—Prerequisite: the Education curriculum, page 68.

Required: the History option, pages 169–70, and the professional courses listed on page 172.

First Group

39–40 *The Development of European Civilization* (3–3) — Kayser, Davison, Thompson

Academic year—morning and evening; summer 1956.

Primarily for freshmen. *First half:* the political, social, economic, and cultural history of the Old World from ancient times to 1715. *Second half:* from 1715 to the present.

71–72 *The Development of the Civilization of the United States* (3–3) — Koenig, Haskett

Academic year—morning and evening; summer 1956.

Primarily for sophomores. *First half:* the political, social, economic, and cultural forces of the United States in their world setting from 1492 to 1865. *Second half:* from 1865 to the present.

Second Group*

109 *Thought and Culture of the Western World I: Ancient Civilization* (3) — Kayser

Fall—morning.

Intellectual and social awakenings in the Near East, Greece, and Rome; classical art, letters, philosophy, and science.

* History 19–40 is prerequisite to courses 129 through 152 and 193 through 196. History 71–72, to courses 173 through 184; either History 19–40 or 71–72, to courses 161 through 168.

110 *Thought and Culture of the Western World II: the Middle Ages and Renaissance* (3) — Kayser

Spring—morning.

Christian thought from Augustine to Thomas Aquinas; humanism and the classical revival, rise of vernacular literatures, the fine arts.

119 *Thought and Culture of the Western World III: from the Reformation through the Age of Reason* (3) — Kayser

Not offered 1956–57.

The growth of Protestant polity and doctrine; the Counter-Reformation; the scientific revival; rationalism and the Enlightenment; arts and letters.

120 *Thought and Culture of the Western World IV: Intellectual Aspects of the Modern Age* (3) — Kayser

Not offered 1956–57.

The evolution of democratic and social concepts, liberalism and authoritarianism in religion and in politics, the impact of modern science and technology, romanticism and realism.

130 *Nationalism* (3) — Kayser

Summer 1956.

The historical evolution of modern nationalism.

145–46 *Russian History* (3–3) — Thompson

Academic year—evening.

First half: Russia and Eastern Europe 862–1900, with emphasis on the 19th century. *Second half:* 20th century Russia in its liberal, revolutionary, and totalitarian phases.

147 *Economic History of Europe* (3) — Gray

Fall—morning.

A survey from ancient times to the present day.

148 *Oversea Expansion of Europe* (3) — Koenig

Fall—morning.

International rivalries and the impact of European civilization in Africa and the Pacific basin since 1500, with emphasis on the nineteenth and twentieth centuries.

149–50 *European Diplomatic History* (3–3) — ————, Davison

Academic year—morning.

Background of the European state system and of diplomatic practices and relations since the Congress of Vienna, with emphasis on the policies and actions of the great powers and their statesmen. *First half*, to 1878; *second half*, since 1878.

151–52 *English History* (3–3) Koenig

Academic year—morning.

A general survey of the development of political, social, and economic institutions of lasting significance in the English speaking world. *First half*, to 1689; *second half*, since 1689.

161 *Ancient Americans* (3) Davis

Not offered 1956–57.

A study of the Maya, Aztec, Inca, and the other early civilizations of North and South America.

162 *Iberian Background of Latin America* (3) Davis

Not offered 1956–57.

History of Spain and Portugal, with emphasis on developments leading to the rise and decline of the Spanish and Portuguese empires.

163 *Latin American History: Colonial Period* (3) Davis

Fall—evening.

Political, economic, social, and institutional developments in Spanish and Portuguese America from the conquest through the wars of independence.

164 *South America since Independence* (3) Davis

Spring—evening; summer 1956.

Development of the independent South American states in the 19th and 20th centuries.

166 *Mexico and the Caribbean since Independence* (3) Davis

Not offered 1956–57.

A survey of the republics of Mexico, Central America, and the Caribbean islands.

171–72 *Social History of the United States* (3–3) Gray

Academic year—evening; summer 1956—History 172 (3).

Daily life, institutions, intellectual and artistic achievements of the Agrarian Era, 1607–1861; and the Urban-Industrial Era, 1861 to the present time.

173 *Representative Americans* (3) Gray

Spring—morning; summer 1956.

A biographical approach to national history. Some fifty significant and pivotal personalities in the development of the United States in government, business, science, religion, journalism, the arts, and social reform.

174 *Economic History of the United States* (3) Gray

Spring—morning; summer 1956.

Main trends in the development of American agriculture, industry, and trade since 1607, with emphasis on tendencies and problems since the Civil War.

175–76 *Political and Constitutional History of the United States* (3–3) Haskett

Academic year—morning; summer 1956—History 176 (3).

The programs and conflicts of group interests in America within the political and legal framework. *First half:* to the eve of the Civil War. *Second half:* the Civil War to 1940.

177 *The South* (3) Gray

Fall—morning.

Rise of the plantation system and slavery; the intersectional conflict; and the problems and progress of the New South.

178 *The West* (3) Koenig

Spring—morning.

The role of the frontier in American history.

181–82 *Diplomatic History of the United States* (3–3) Merriman

Academic year—morning and evening; summer 1956.

Tendencies toward isolation, expansion and collectivism; disputes with foreign countries and their settlement; and the activities of the American secretaries of state and diplomatic agents. *First half:* to 1871. *Second half:* since 1871.

183 *Oversea Expansion of the United States* (3) Merriman

Not offered 1956–57.

The political, economic, social, and cultural life of our outlying possessions.

184 *Canada and the United States* (3) Merriman

Not offered 1956–57.

The historical background and main trends in the relationship of the two English-speaking peoples of North America.

191–92 *Current History* (1–1) Kayser

Academic year—afternoon.

Contemporary events in their world setting.

193 *History of the Near East* (3) — Davison

Not offered 1955–56.

The Byzantine, Arab, Persian, and Islamic backgrounds of Near Eastern history; the rise and decline of the Ottoman Empire; the action of European powers in the area; and the Ottoman breakup into the Turkish Republic and other successor states.

195–96 *History of the Far East* (3–3) — Thompson

Academic year—afternoon.

First half: the civilizations of China, India, and Japan from the beginnings to 1600 A.D. *Second half:* the modern Orient under the impact of the West since 1600.

197–98 *Proseminar in Latin American Civilization* (3–3) — Davis, Wythe

Academic year—as arranged.

Reading course for coordination and review. Open only to majors in Latin American Civilization.

199–200 *Proseminar: Reading for the History Major* (3–3) — The Staff

Academic year—evening; summer 1956.

Limited to majors in History. Readings and discussions on main trends in the history of Western civilization, including representative selections from the classics of historical literature.

THIRD GROUP*

241–42 *Conference Seminar in Recent European Diplomatic History*† (3–3)

Not offered 1956–57.

244 *Reading Course in Modern European History* (3) — Davison

Spring—as arranged.

Primarily for graduate students.

246 *Seminar in Russian and Far Eastern History* (3) — Thompson

Spring—evening.

247 *Reading Course in Russian and Far Eastern History* (3) — Thompson

Fall—evening.

Primarily for graduate students.

* Approval of the instructor is required for registration in each third-group course.
† Primarily for Master's candidates in the School of Government.

249 *Seminar in European Diplomatic History* (3) Davison

Not offered 1956–57.

261–62 *Seminar in Latin American History* (3–3) Davis

Academic year—evening.

271–72 *Seminar in the Social History of the United States* (3–3) Gray

Academic year—evening.

275–76 *Seminar in American Political and Constitutional History* (3–3) Haskett

Academic year—evening.

281–82 *Seminar in the Diplomatic History of the United States* (3–3) Merriman

Academic year—afternoon.

287 *Conference Seminar on the Development of the Foreign Policy of the United States** (3)

Not offered 1956–57.

291–92 *Seminar* (3–3) The Staff

Academic year—as arranged; summer 1956.

Prerequisite: approval of the Department.

294 *Seminar in the History of the Modern Near East* (3) Davison

Spring—evening.

299–300 *Thesis* (3–3) The Staff

Academic year—as arranged; summer 1956.

Required of all candidates for the Master's degree specializing in history.

* Primarily for Master's candidates in the School of Government.

HOME ECONOMICS

Frances Kirkpatrick, A.M., *Professor of Home Economics, Executive Officer*

Kathryn Mildred Towne, A.M., *Professor of Home Economics*

Bachelor of Science with a major in Home Economics (School of Education).—Prerequisite: Home Economics curriculum in the Junior College, see page 69. The requirements for the degree are stated on pages 164 and 172.

Bachelor of Arts in Education with a teaching field in Home Economics (School of Education).—Prerequisite: the Education curriculum on page 68. For requirements, see special bulletin on Home Economics.

First Group

1 *Food Selection and Preparation* (3) Kirkpatrick

Fall—morning; spring—evening.

Composition, selection, and preparation of food; analysis of recipes; standard products; planning, preparing, serving, and estimating the cost of meals. Material fee, $18.

22 *Clothing: Its Selection, Cost, and Care* (3) Towne

Fall—evening; spring—morning.

Clothing selections—the economic, aesthetic, and hygienic aspects; the application of the principles of color and design to individual selection; the care of clothing.

51 *Family Meals* (3) Kirkpatrick

Fall—evening.

The choice, purchase, preparation, and service of foods; dietary standards, food habits, and the nutritional needs of the family; problems of purchasing, care, and use of food by the consumer. Material fee, $11.

53 *Family Health and Household Sanitation* (3) Kirkpatrick

Spring—afternoon.

Home hygiene and home care of the sick; the principles of household sanitation in relation to health and diseases.

62 *Clothing Construction* (3) Towne

Spring—afternoon.

Simplified techniques and unit method of construction suitable for cotton, wool, silk, and man-made fibers; the use of commercial patterns and their alteration; the proper selection of color, design, and fabric. Material fee, $8.

71 *Costume Design and Fashion Economics* (3) Towne

Fall—afternoon.

Factors determining fashions and effect on cost of clothing; problems of the consumer of textiles and clothing; historic costume and its relation to modern dress. Material fee, $8.

72 *Household Textiles* (3) Towne

Spring—evening.

Properties, uses, and tests of the different textile fibers and fabrics, and development of judgment and knowledge of standard for the consumer of clothing and house-furnishing material. Material fee, $8.

77 *Marketing* (3)

Not offered 1956–57.

Purchasing of foods as it relates to the home and to the institution.

SECOND GROUP

102 *Advanced Food Preparation* (3) Kirkpatrick

Spring—morning.

The application of the fundamental processes of food preparation to a wider range of food materials and various services for different occasions. Material fee, $18.

106 *Quantity Cookery* (3) The Staff

Not offered 1956–57.

123 *Household Finance and Problems of the Consumer* (3) Towne

Fall—morning.

Economic problems of the family in modern industrial society; family income; income apportionment and household expenditures; laws affecting the home; investments; consumer buying.

143 *Advanced Clothing Construction* (3) Towne

Fall—afternoon.

Problems of clothing construction and flat pattern designing. Material fee, $8.

148 *Food Problems and Demonstration Methods* (3) Kirkpatrick

Not offered 1956–57.

Factors affecting the preparation of standard products from the experimental viewpoint; principles of demonstration. Material fee, $18.

152 *Nutrition* (3) Kirkpatrick

Spring—morning.

Lecture course on the principles of normal and abnormal human nutrition. Laboratory work on the calculation and preparation of dietaries. Laboratory fee, $8.

154 *Diet Therapy* (3)

Not offered 1956–57.

Study of nutrition as applied to diet and disease. Material fee, $8.

164 *Child Nutrition* (3) Kirkpatrick

Not offered 1956–57.

Basic principles in nutrition and growth of the infant, pre-school, and adolescent child in health and disease.

168 *Institutional Management* (3)

Not offered 1956–57.

Study of the organization, equipment, and marketing problems of institutions.

171 *House Furnishing* (3) Towne

Fall—morning.

Home planning from the historic, artistic, economic, and sanitary viewpoints, home furnishings such as linens, dishes, floor covering, mattresses, etc. Material fee, $5.

181 *The Child in the Home* (3) Kirkpatrick

Not offered 1956–57.

Care and development of children; parent-child relationships.

192 *The Home, Its Management and Equipment* (3) Kirkpatrick

Fall—afternoon.

Economic management of the home; distribution of time and energy; problems in the selection, arrangement, and care of equipment.

193 *Supervision of Home Management* (3) The Staff

Fall—as arranged.

Field work under supervision. Designed to meet requirements of those preparing to teach in federally aided schools.

195–96 *Special Problems* (3–3) The Staff

Academic year—as arranged.

Individual investigation or study under the guidance of a member of the staff. Suggested problems are: marketing, tailoring, draping, and fabric decorations. Program and conferences arranged with an instructor.

197–98 *Proseminar* (3–3) The Staff

Academic year—evening.

The study of the most recent materials and problems in the various phases of home economics.

JOURNALISM

Elbridge Colby, Ph.D., *Professor of Journalism, Executive Officer*
Robert Crumpton Willson, A.B., *Assistant Professor of Journalism*
Frank Landt Dennis, A.B., LL.B., *Lecturer in Journalism*
William Vance Nessly, *Lecturer in Journalism*
John Vincent Hinkel, M.S., *Lecturer in Journalism* (Public Relations)
Virginia Imlay Cotton, M.S., *Lecturer in Journalism*
Kip Ross, *Lecturer in Journalism*
Howard Lee Coppenbarger, *Lecturer in Journalism*
Louis Robinson, A.B., *Lecturer in Journalism*

Seminar Lecturers

Richard Hollander, Managing Editor, *The Washington Daily News*
James Russell Wiggins, Executive Editor, *The Washington Post and Times Herald*

Bachelor of Arts with a major in Journalism (Columbian College—Departmental):

In the field of News-Editorial.—Prerequisite: the Arts and Letters curriculum in the Junior College, including Journalism 71–72 and 81–82, see page 66. It is recommended that electives in the Junior College be selected from the following: Economics 1–2, English 71–72, History 71–72, Political Science 9–10, Psychology 1, Sociology 1–2, and Speech 1 and 2, 11, or 32.

Required: the general requirements as stated on pages 82–87. Of the sixty hours of required courses in Columbian College a minimum of eighteen must be in second-group Journalism courses, including 115, 137, 151, and 198. It is recommended that electives in Columbian College be selected from the following: Business Administration 147; English 171–72, 177–78; History 183, 191–92; Psychology 151, 156; and Speech 137.

In the field of Public Relations.—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 66. Electives should include Economics 1–2; English 11; History 71–72; Journalism 71–72, 81–82; Psychology 1, 2; and Speech 1, 2, or 11, or 32.

Required: the general requirements as stated on pages 82–87. The sixty hours of required courses in Columbian College must include the following: Journalism 121, 143, 145, 146, and such courses in Business Administration, English, History, Psychology, and Speech, as are selected upon the advice of the Journalism Department. It is recommended that Columbian College electives be selected from the following: Business Administration 101, 102, 105, 106, 109, 141, 142, 147; History 174; Journalism 121, 142, 151; Psychology 144, 146, 148, 151, 156; Speech 131, 137. In exceptional cases changes from the required and recommended courses may be permitted with the approval of the Journalism Department.

First Group

71–72 *Survey of American Journalism* (3–3) Colby

Academic year—morning and evening.

Journalism 71: the newspaper's position in relation to political, social, and economic life, as a public institution and as a private business, including techniques of gathering and presenting news and of leading opinion, and their effects. Journalism 72: development of newspapers from colonial days to the present and their relations to social, literary, economic, and political history.

81–82 *Reporting* (3–3) ———, Coppenbarger

Academic year—morning and evening.

Techniques of newspaper reporting, instruction and practice in modern methods of gathering and presenting news. Some knowledge of typing is desirable. Prerequisite: English 1 or the equivalent. Laboratory fee, $7 a semester.

Second Group

115 *Newspaper Copy Editing and Make-up* (3) Nessly

Fall—Saturday morning.

Editing of news prior to publication, the copy desk, headlines, make-up, the city editor and his functions. Prerequisite: Journalism 81–82 or the equivalent, unless taken concurrently.

121–22 *Feature Writing* (3–3) Willson

First half: fall—morning; spring—evening. *Second half:* not offered 1956–57.

Instruction and practice in writing of special newspaper and magazine articles for sale, material for which is obtained through interviews and independent investigation. Prerequisite: English 1, 2 or the equivalent.

133 *City News Reporting* (3) ———

Fall—evening.

Training and practice in coverage and presentation of local news. Prerequisite: Journalism 81–82.

137 *Reporting of National Affairs* (3) Cotten

Spring—afternoon.

Training in the coverage and presentation of national news with special attention to Washington correspondence and press association reporting.

140 *Pictorial Journalism* (3) Ross

Fall—evening.

Photographic techniques affecting publication, the illustration and the story angle, standards of judgment in selection and use of good pictures, captions, and editing techniques, cropping for effective reproduction.

142 *Retail Newspaper Advertising* (3) Robinson

Spring—evening.

Retail newspaper advertising management, coordination of newspaper advertising with retail sales patterns, advertising readership, copy preparation, production methods. Prerequisite: Business Administration 147 or permission of the instructor.

143 *Industrial Communications* (3) Willson

Fall—evening.

An introduction to the field of corporate journalism. Writing and editing the employee magazine. Preparation of annual reports. Editing stockholder publications and external house organs. The preparation of employee manuals, sales and training aids, catalogues, and bulletins.

144 *Business Journalism* (3) Willson

Spring—Saturday morning.

An introduction to the functions and activities of the business paper publishing industry. Writing for the business press. Reporting the news of business and industry, finance, advertising, and marketing.

145 *Principles of Public Relations* (3) Hinkel

Fall—Saturday morning.

The press and information office, technique of news releases, public addresses as news, promotion of feature material, the problem of public relations in government agencies and commercial establishments.

146 *Problems in Public Relations* (3) Hinkel

Spring—Saturday morning.

Case histories of successful public relations programs, discussion of public relations procedures and ethics, preparation of specific public relations projects. Prerequisite: Journalism 145.

151 *Editorial Writing* (2 or 3) Colby

Fall (3)—evening; spring (2)—morning.

Current events from the standpoint of editorial interpretation, instruction and practice in the writing of editorials and columns on public affairs. It is recommended that History 191 or 192 be taken concurrently with this course.

198 *Law of the Press* (3) Dennis

Spring—evening.

Freedom of the press, censorship, legislative controls, publications as contempt of court, copyright, news gathering agencies, labor law and the newspaper business, law of libel, privileged matter, fair comment on public characters, right of privacy.

LAW

Charles Sager Collier, A.B., LL.B., S.J.D., *Professor of Law*
William Thomas Fryer, A.B., LL.B., J.D., *Professor of Law*
Carville Dickinson Benson, A.B., LL.B., S.J.D., *Professor of Law*
*James Forrester Davison, A.B., LL.B., LL.M., S.J.D., *Professor of Law*
James Oliver Murdock, Ph.B., LL.B., *Professor of Law*
Oswald Symister Colclough, B.S., LL.B., LL.D., *Professor of Law*
John Theodore Fey, LL.B., M.B.A., J.S.D., *Professor of Law, Executive Officer*
Herman Israel Orentlicher, A.B., LL.B., *Professor of Law*
Leroy Sorenson Merrifield, A.B., LL.B., M.P.A., *Professor of Law*
James Ward Morris, A.B., *Adjunct Professor of Law*
James Robert Kirkland, A.B., LL.B., LL.M., *Adjunct Professor of Law*
†Bolitha James Laws, LL.B., LL.M., LL.D., *Adjunct Professor of Law*
John Wingfield Jackson, B.S., LL.B., *Adjunct Professor of Law*
Frank Hammett Myers, LL.B., LL.M., *Adjunct Professor of Law*
John Albert McIntire, A.B., LL.B., LL.D., *Professorial Lecturer in Law*
Justin Lincoln Edgerton, A.B., LL.B., *Professorial Lecturer in Law*
Philip Field Herrick, A.B., LL.B., LL.M., *Professorial Lecturer in Law*
George Edward Monk, A.B., LL.B., LL.M., *Professorial Lecturer in Law*
Charles James Zinn, A.B., LL.B., LL.M., S.J.D., *Professorial Lecturer in Law*
Joseph Dach, LL.D., LL.B., *Professorial Lecturer in Law*
Louis James Harris, A.B., LL.B., S.J.D., LL.M., *Professorial Lecturer in Law*
Robert McKinney Cooper, Ph.M., J.D., *Associate Professor of Law*
John Patrick Burke, A.B., LL.B., *Associate Professor of Law*
David Benson Weaver, A.B., LL.B., *Associate Professor of Law*
Louis Harkey Mayo, B.S., LL.B., J.S.D., *Associate Professor of Law*
Glen Earl Weston, B.S., LL.B., *Associate Professor of Law*
Joseph Patrick Driscoll, A.B., LL.B., *Associate Professor of Law*
William Thomas Mallison, Jr., A.B., LL.B., *Associate Professor of Law*
Crombie James Dickinson Garrett, A.B., LL.B., *Associate Professor of Law*
Milton Paul Kroll, A.B., LL.B., *Lecturer in Law*
Eugene William Geniesse, B.S.E., M.S., LL.B., *Lecturer in Law*

* On sabbatical leave fall semester 1956–57.
† On leave of absence fall semester 1956–57.

William Wolcott Goodrich, LL.B., *Lecturer in Law*
Vincent Klienfeld, LL.B., *Lecturer in Law*
Paul Archibald Rose, LL.B., *Lecturer in Law*
Herbert Joseph Liebesny, J.D., *Lecturer in Law*
Carl Clell Davis, B.S., LL.B., LL.M., *Lecturer in Law*
John Alexander Kendrick, A.B., LL.B., *Clerk of the Trial Practice Court*
Dudley Graham Skinker, LL.B., *Associate Clerk of the Trial Practice Court*

For the requirements for the degrees of *Bachelor of Laws, Juris Doctor, Master of Laws, Master of Comparative Law, Master of Comparative Law (American Practice)*, and *Doctor of Juridical Science* see pages 127–29, 131–32.

First Year

100 *Agency* (2) — Cooper

Fall—evening; spring—morning.

Master and servant (status of agent), respondeat superior, nature of agency relation, actual authority, parties (disclosed and undisclosed principal), unauthorized transactions, notice, notification.

110 *Constitutional Law* (4) — Collier, Mallison

Spring—morning and evening.

Historical introduction, judicial approach and methods, doctrine of the separation of powers, powers of the National Government; the federal system and relation of federal and state courts.

115–16 *Contracts I, II* (4–2) — Mayo, Garrett

Academic year—morning and evening; summer 1956.

Scope of protection accorded contracts; specific performance of contracts other than land transactions; damages, restitution. Mutual assent: offer and acceptance, misunderstanding, mistake, reformation, parol evidence rule. Consideration, third party beneficiaries, assignments, conditions, Statute of Frauds.

125 *Criminal Law and Procedure* (4) — Murdock, Cooper

Fall—morning; spring—evening; summer 1956.

Origin and purposes of criminal law; elements of criminal liability; mental disorders; solicitation, attempt, and conspiracy; crimes against the person, against property, and against both; statutory offenses; criminal procedure, with consideration of Federal Rules of Criminal Procedure.

135 *Legal Method and Legal System* (4) — Fryer, Benson, Burke

Fall—morning and evening; spring—morning and evening; summer 1956.

Introduction to substantive and procedural law dealing with basic concepts; training in method and technique of case law and legislation using modern case records; practice in use of law books and in legal writing; importance of language in law; legal reasoning and use of precedents under doctrines of stare decisis, law of the case, and res judicata; development of Anglo-American legal system; organization of judiciary and bar, stressing enforcement of ethical standards.

145 *Personal Property* (2) — Fryer, Mallison, Garrett

Fall—morning and evening; spring—morning and evening.

Concepts of property, including interests created by bailments, liens, and pledges; methods of acquiring ownership.

150 *Real Property* (2) — Benson

Fall—evening; spring—morning; summer 1956.

Historical background of the law of estates and conveyances, possessory estates, concurrent estates.

160 *Torts* (4) — Merrifield, Garrett

Spring—morning and evening.

Liability for harm to persons or tangible things; defamation and invasion of privacy.

Second Year

200 *Administrative Law* (4) — Davison

Spring—morning and evening; summer 1956.

The position of the administrative process in the separation of powers, including the status of administrative personnel, administrative hearings, judicial scrutiny of administrative action, discretion, and rule-making—particularly as relating to federal administrative agencies.

205 *Brief Writing and Oral Argument* (2) — Burke

Fall—evening.

Exposition and study of the basic techniques of written and oral legal argumentation. Each student will be required to write, as a term paper, a brief presenting contentions based on the actual record in an unargued case.

210 *Business Associations* (4) Weaver

Spring—morning and evening.

Contrast of the partnership and corporation as alternative forms of organization; organizing partnerships and corporations—formalities, capital contributions, share structure; problems of operation; relations between partners; roles of shareholders, directors, officers; control devices; distributions to owners; voluntary reorganization; dissolution and termination.

215 *Civil Procedure* (4) Burke

Fall—morning and evening; summer 1956.

Pleadings, discovery, joinder, forms of trial and related proof problems. Emphasis is on Federal Rules of Civil Procedure and other modern codes.

219 *Commercial Paper* (4) Orentlicher

Fall—morning and evening; summer 1956.

Bills of exchange, promissory notes and checks, especially under the Negotiable Instruments Law.

224 *Commercial Transactions* (4) Orentlicher

Spring—morning and evening.

The law relating to the sale and distribution of goods, and to the security financing devices utilized in this connection, with particular attention to the effect of uniform laws.

230 *Conveyances* (2) ———

Spring—evening.

Land contracts, conveyances, recording; easements, profits, covenants, and equitable servitudes; adverse possession and adverse user.

235 *Domestic Relations* (2) Mallison

Fall—morning and evening; summer 1956.

Marriage, annulment, and divorce; adoption and custody of children; economic relations.

240 *Evidence* (4) Fryer

Spring—morning and evening; summer 1956.

Functions of court and jury; qualification and examination of witnesses; opinion, relevancy and scientific evidence; proof of writings; application of the hearsay rule.

243 *Federal Jurisdiction* (2) — Cooper

Fall—morning and evening.

Constitutional and statutory origins of federal courts, cases arising under the laws and the Constitution, diversity of citizenship, jurisdictional amount, removal procedure and jurisdiction, limitations on federal jurisdiction, state and federal conflicts, substantive law applied by federal courts.

248 *Future Interests* (2) — Benson

Spring—morning and evening; summer 1956.

Future interests at common law and under modern statutes, construction of limitations, powers of appointment, rule against perpetuities.

251 *Insurance* (2) — Driscoll

Fall—evening.

The insurance device in life, property, and other risks.

254 *International Law* (4) — Murdock

Spring—morning and evening.

The basic course. General survey of rights and duties of states; law of war and peace, including nationality law, international claims, pacific settlement of disputes, treaties, United Nations and World Court; study of source materials of International Law.

259 *Labor Law* (4) — Merrifield

Fall—morning and evening.

Law governing labor-management relations, organization and representation of employees, regulation of economic weapons, enforcement of collective bargaining agreements, inter-union and intra-union relations.

265 *Legal Accounting* (2) — Fey

Fall—morning and evening; summer 1956.

A study of elementary accounting principles and techniques; application of accounting principles to legal problems.

270 *Legislation* (2) — Mallison

Spring—evening; summer 1956.

The legislative process, with particular emphasis on its operation in federal and state governments; legislative organization and procedure; statutory interpretation.

274 *Taxation—Federal Estate and Gift* (2) Driscoll

Spring—morning and evening.

Specific problems in federal estate and gift taxation, with consideration of relevant state inheritance tax problems.

279 *Taxation—Federal Income* (4) Fey, Driscoll

Fall—evening; spring—morning.

A study of the federal income tax, including construction of statutes, practice and procedure, and legislative policy.

285 *Trusts and Estates* (4) Weaver

Fall—morning and evening; summer 1956.

Formalities of execution of wills; problems of construction, revocation, contest; limits on testamentary power; intestate succession. Creation of trusts, inter vivos and testamentary; administration of decedents' estates and trust estates.

295 *Unfair Trade Practices* (4) Weston

Fall—morning and evening.

Unfair trade practices at common law and under statutes; trademarks, trade names; copyright law; misappropriation of ideas; protection of competitors and consumers against false advertising under Federal Trade Commission Act; resale price maintenance under state Fair Trade Acts; miscellaneous business practices.

THIRD YEAR

300 *Admiralty* (2) Davis

Spring—evening.

Federal and state jurisdiction; jurisdiction over waters, craft, contracts, torts, crimes, in equitable matters, etc.; laws applicable to maritime workers and maritime liens.

303 *Aviation Law* (2) ———

Fall—evening.

Procedure before Civil Aeronautics Board; legal problems arising in connection with air transportation and airports, international conventions and organizations.

307 *Comparative Law* (4) Murdock

Fall—evening.

The Civil Law System; general introduction to foreign law as exemplified by Roman Law and the modern French Law; comparative study of administration of justice, legal institutions, and methods for international law practice and working with foreign lawyers.

309 *Conflict of Laws* (4) Collier

Fall—morning and evening; summer 1956.

Study of cases involving foreign elements; principles of jurisdiction and limitations upon its exercise; procedure, torts, workmen's compensation, contracts, property, family law, administration of estates, business associations.

313–14 *Constitutional Interpretations* (2–2) Collier

Academic year—evening.

Advanced course in constitutional law. The Constitution and constitutional tradition; doctrines of limited government, separation of powers, implied limitations on legislative power, and significance of "due process" in current constitutional developments. Introduction to comparative constitutional law, with studies in the constitutional law of selected states of the Union.

318 *Creditors' Rights* (4)

Summer 1956.

Remedies of unsecured creditors; judgments, fraudulent conveyances, creditors' agreements, equity and statutory receiverships, and bankruptcy. The general approach is that of law administration.

321–22 *Current Decisions* (2–2) Weston

Academic year—morning and evening.

Required of, and limited to, members of the student staff of the *Law Review*.

330 *Federal Anti-Trust Laws* (4) Weston

Spring—evening.

Restraints of trade at common law and under Sherman Anti-Trust Act of 1890, Federal Trade Commission and Clayton Acts by mergers, monopolies, price-fixing agreements, trade associations, exclusive-dealing agreements, tie-in sales, and trade boycotts; patents and copyrights under anti-trust laws.

335 *Jurisprudence* (4) Collier

Not offered 1956–57.

History of jurisprudence; schools of jurists, particularly the nineteenth century schools; sociological jurisprudence; theories of justice; the nature of law, law and morals; law and the state; the scope and subject matter of law, sources and forms of law; the traditional element; analysis of general legal concepts.

339 *Labor Arbitration* (2) Merrifield

1957–58 and alternate years.

Labor arbitration and collective bargaining; role of the lawyer in negotiation and administration of collective labor agreements; practices, procedures, and substantive issues in labor arbitration.

341 *Labor Standards and Social Security Legislation* (2) — Merrifield

Fall—evening.

Legal problems arising under federal and state statutes dealing with labor standards and social security. Particular emphasis is placed upon the regulation of wages and hours, workmen's compensation, and insurance against unemployment and old age.

345 *Legislative Drafting* (2) — Zinn

Fall—evening.

Advanced instruction and practice in legislative drafting.

349 *Local Government Law* (2) — Mallison

Fall—evening.

Types and objectives of city, county, and local governmental units; intergovernmental relations; original organization and changes; local lawmaking; community planning and development.

355 *Mortgages* (2) — Orentlicher

1957–58 and alternate years.

Security interests in real property, their creation, transfer, enforcement, and extinguishment.

359 *Patent Law I** (2) — ———

Fall—evening.

Origin and nature of patents, trade-marks and copyrights; patentability; amendment and correction of patents; conditions precedent to grant of patents.

360 *Patent Law II* (2) — Harris

Spring—evening.

Licensing and protection of patents; government ownership; protection of patent rights abroad; economic and social functions of patents.

362 *Patent Office Practice** (2) — Rose

Spring—evening.

Rules and practice; appeal and interference procedure.

365–66 *Patent Trial Practice Court** (2–2) — Geniesse

Academic year—evening.

Practice before the United States Court of Customs and Patent Appeals and the federal courts.

This course may be elected instead of Law 385–86 to satisfy the Trial Practice Court requirement.

* Patent law students should take Law 359 and Law 365 concurrently in the fall semester and Law 362 and Law 366 concurrently in the spring semester. Law 365–66 may be taken only by students who are taking or have taken Law 359.

370 *Public Utilities* (2) — Fryer

1957–58 and alternate years.

Regulation by federal, state, and municipal authorities concerned with licensing, rates, services, and practices, with emphasis on federal regulation of interstate operations; judicial review.

376 *Restitution* (2) — Burke, Orentlicher

Spring—morning and evening.

Remedies at law and in equity for restitution of benefits conferred, especially as based on the concept of unjust enrichment.

380 *Suretyship* (2) — Orentlicher

Not offered 1956–57.

The law of suretyship, especially in the context of accommodation credit and commercial and financial practices, with attention also to informal and non-consensual suretyship relations and the place of suretyship principles in the solution of legal problems generally.

385–86 *Trial Practice Court* (2–2) — Morris, Kirkland, Edgerton, Myers, Jackson, Herrick, Monk, Kendrick, Skinker

Academic year—morning and evening.

Trial of assigned cases; trial tactics and techniques; pre-trial and court room procedures pursuant to Federal Rules.

To be taken in the senior year. Prerequisite: Law 215 and 240.

391 *World Law* (2)

Not offered 1956–57.

International organization; the legal aspects of the United Nations.

Graduate Courses

401 *Administrative Law Seminar* (2) — Davison

Spring—evening.

Group study of specific problems in administrative law.

404 *Comparative Law Seminar* (2) — Murdock

Not offered 1956–57.

Group study of contemporary problems in comparative law.

408 *Constitutional Law Seminar* (2) — Collier

Not offered 1956–57.

Group study of contemporary problems in constitutional law.

* See footnote page 335.

412 *Control and Use of Atomic Energy* (2) Mayo

Spring—evening.

Various legal problems involved in the control and use of atomic energy will be examined, including the Atomic Energy Act, the policy underlying the present government monopoly, the security problem of safeguarding atomic military information, the implications in prospective industrial control and use, and legal means of protecting personal interests against the possible consequences of atomic warfare.

416 *Criminal Practice and Administration* (2) Cooper

Spring—as arranged.

Group study of the fundamental aspects of criminal procedure with special reference to practice before the District of Columbia and federal courts: the law of arrest, searches and seizures, self-incrimination, the function of the preliminary examination and grand jury, sufficiency of indictments, trial procedure, and the order of pleas and motions.

420 *Estate Planning Seminar* (2) Weaver

Spring—evening.

Group study of the effective disposition of wealth, inter vivos and testamentary gifts, conservation for owner's future use, use of insurance, tax and administrative problems, business interests, pension and profit-sharing arrangements.

424 *Evidence and Trials Seminar* (2) Fryer

Spring—evening.

Study of selected problems involving presentation of documentary proof and expert testimony in connection with the reforms sought by the Uniform Rules of Evidence and recent developments in the field of forensic medicine.

428 *Food and Drug Law* (2) Goodrich, Kleinfeld

Spring—evening.

A lecture and discussion course dealing with the Federal Food, Drug, and Cosmetic Act and governmental controls thereunder. Both government and industry viewpoints are considered.

431 *Government Contracts I* (2) McIntire

Fall—evening.

A consideration of the basic power of the Federal Government to enter into contracts; the nature and construction of such contracts; normal and war or defense powers aspects of government procurement, including administrative and legislative policy and procedures; forms of contracts; standard clauses; advertised bid procedure problems; negotiated contracts; modification of contracts; remedies on contractual claims.

432 *Government Contracts II* (2) McIntire

Spring—evening.

Special problems in government contracts, including adjustments and relief; procedure for prosecuting claims under government contracts, attempts at price, cost, or profit control; termination.

437 *International Law Seminar* (2) Murdock

Spring—evening.

Group study of contemporary problems in international law.

442 *Labor Law Seminar* (2) Merrifield

Spring—evening.

Group study of contemporary problems in labor law.

446 *Law of Money and Monetary Obligations* (2) Dach

Not offered 1956–57.

Introductory survey of the provisions of public law by which money is administered, relating particularly to the Federal Reserve System; the legal character of money and of monetary obligations; legal tender; the "dollar-for-dollar" rule and its limitations; protective clauses (gold, commodity, and index clauses). Particular emphasis will be given to the law relating to foreign money.

449 *Law of the Near East* (2) Liebesny

Not offered 1956–57.

A study of the law of the Arab countries, including the basic principles of the Islamic law, an analysis of the present day codes, and an investigation of the Western influences on the laws of the Arab countries.

455 *Legal Problems in Modern Methods of Warfare* (2) Mallison

Fall—evening.
The contemporary international law of war: legal aspects of modern methods of coercion (economic, political, psychological, and military); regulation of hostilities; the special problems of atomic, bacteriological and chemical weapons; war crimes.

459 *Military Law and Jurisdiction* (2)

Not offered 1956–57.

Sources of military jurisdiction; military law proper, including court martial jurisdiction and procedures before, during, and after trial; military government; martial law; laws of war and treatment of offenders.

463 *Regulation of Communication Media* (2) Mayo

Fall—evening.

An examination of the legal doctrine relating to regulatory practices in the channels of mass communications, i.e., newspapers, motion pictures, and radio-television; analysis of the operational structure of the mass media and the pattern of control exercised by government, private associations, and various community groups; appraisal of the comparative utility of various regulatory techniques for implementing policies affecting these media; special emphasis will be placed on the functions of the Federal Communications Commission.

466 *Regulation of Securities and Securities Markets* (2) Kroll

Spring—evening.

A study of state and federal laws governing the offering and distribution of securities to the public by corporate issuers and others, the regulation of securities markets, and the rights and liabilities of purchasers under such statutes. Particular emphasis will be given to statutes administered by the Securities and Exchange Commission.

469 *Research in Patent, Trade-Mark, and Copyright Law* (2) Harris

Fall—as arranged; spring—as arranged.

Registration is limited to students who have taken Substantive Patent Law and related courses including, as a rule, Trade Regulation Seminar, and who have at least a *B* average. A request in writing, with a proposed outline of the topic of research, must be submitted to the Dean at least one month prior to registration day. Registration is permitted for one semester only and the work must be completed within the semester.

471 *Research in Public Law* (2) The Staff

Fall—as arranged; spring—as arranged.

Registration is limited to students who have previously had a seminar or comparable course in the field of the proposed research and who have at least a *B* average. A request in writing, with a proposed outline of the topic of research, must be submitted to the Dean at least one month prior to registration day. Registration is permitted for one semester only and the work must be completed within the semester.

475 *Taxation—Corporate* (2) Driscoll

Fall—evening.

Case law and 1954 Internal Revenue Code provisions applicable to corporations; analysis of corporate distributions, redemptions of stock, reorganizations and mergers; collapsible corporations, corporate liquidations, sales of business enterprises; personal holding companies, accumulated earnings tax, and carry-overs.

478 *Taxation of Foreign Income Seminar* (2) Driscoll

Not offered 1956–57.

Group study of methods of taxing income received from abroad and taxation of non-resident aliens; analysis of principal income taxation and estate taxation treaties; consideration of legislative proposals for taxation of foreign income.

480 *Taxation—Oil and Gas* (2) Driscoll

Spring—evening.

A study of the case law relating to percentage depletion, sales and transfers of interests in oil and gas properties; legal aspects of financing methods in oil and gas operations; application of partnership and corporation provisions of the 1954 Internal Revenue Code to oil and gas activities.

485 *Taxation Seminar* (2) Driscoll

Spring—evening.

Group study of special problems and recent developments in federal taxation.

492 *Trade Regulation Seminar* (2) Weston

Spring—evening.

Group study of current problems, relating to unfair trade practices and federal anti-trust laws.

495 *Urban Redevelopment* (2) Orentlicher

Fall—evening.

Selected problems in urban redevelopment and housing, with particular emphasis on programs under current federal and state legislation.

MATHEMATICS

James Henry Taylor, Ph.D., *Professor of Mathematics*
Francis Edgar Johnston, Ph.D., *Professor of Mathematics*
Florence Marie Mears, Ph.D., *Professor of Mathematics*
Isidor Heller, Ph.D., *Professorial Lecturer in Mathematics*
*Nels David Nelson, Ph.D., *Associate Professor of Mathematics, Acting Executive Officer*
Louis William Tordella, Ph.D., *Lecturer in Mathematics*
Earl Larkin Williams, A.M., *Lecturer in Mathematics*

Bachelor of Arts or *Bachelor of Science with a major in Mathematics (Columbian College—Departmental)*.—Prerequisite: the Arts and Letters or the Science curriculum, respectively, in the Junior College, see pages 66 and 67.

Required: in addition to the general requirements as stated on pages 82–87, fifteen semester hours of Mathematics of approved second- and third-group courses.

Master of Arts or *Master of Science in the field of Mathematics (Columbian College)*.—Prerequisite: a Bachelor of Arts or Bachelor of Science degree, respectively, with a major in Mathematics at this University, or the equivalent.

Required: the general requirements as stated on pages 89–92.

Doctor of Philosophy (Graduate Council).—See page 97.

Bachelor of Science in Engineering with an option in Mathematics (School of Engineering).—For requirements, see pages 138–41, 143, 145.

Bachelor of Arts in Education with a teaching field in Mathematics (School of Education).—Prerequisite: the Education curriculum in the Junior College, page 68.

Required: the Mathematics option, page 170, and the professional courses listed on page 172.

First Group†

3 *College Algebra* (3) — The Staff

Fall—morning and evening; spring—morning and evening; summer 1956.

Exponents and logarithms; linear equations; complex numbers; quadratic equations; introduction to theory of equations; mathematical induction and the binomial theorem; permutations, combinations, and probability; determinants; progressions. Prerequisite: one year each of high school algebra and high school geometry.

* On sabbatical leave spring semester 1956–57.
† No first-group course in mathematics is available for college credit if the student's previous training in mathematics meets the prerequisite for a higher numbered course.

6 *Plane Trigonometry* (3) The Staff

Fall—morning and evening; spring—morning and evening; summer 1956.

Prerequisite: two years of high school algebra and one year of high school geometry, or Mathematics 3 (or concurrent registration therefor).

12 *Analytic Geometry* (3) The Staff

Fall—morning and evening; spring—morning and evening; summer 1956.

Prerequisite: Mathematics 3 and 6, or two years of high school algebra, one year of high school geometry, and one-half year of high school trigonometry.

19 *Differential Calculus* (3) The Staff

Fall—morning and evening; spring—morning and evening; summer 1956.

Prerequisite: Mathematics 12.

20 *Integral Calculus** (3) The Staff

Fall—morning and evening; spring—morning and evening; summer 1956.

Prerequisite: Mathematics 19.

SECOND GROUP*

102 *Fundamental Concepts of Mathematics* (3)

Not offered 1956–57.

103 *Calculus and Differential Equations* (3) The Staff

Fall—morning and evening; spring—morning and evening; summer 1956.

112 *Mathematics for Engineers and Scientists* (3) Johnston

Spring—evening.

Topics from advanced calculus, partial differential equations, vector analysis, and complex variables. Prerequisite: Mathematics 132 or 103.

123 *Theory of Equations* (3) Johnston

Fall—evening.

125 *Advanced Algebra* (3)

Not offered 1956–57.

126 *Advanced Analytic Geometry* (3)

Not offered 1956–57.

* Mathematics 20 is prerequisite to all second-group courses

132 *Differential Equations* (3) Taylor
Fall—evening.

134 *Introduction to Boundary Value Problems* (3) Taylor
Spring—evening.
Prerequisite: Mathematics 103 or 132.

135–36 *Projective Geometry* (2–2)
A year course: credit is not given for the first half until the second half is completed.
Not offered 1956–57.

139 *Advanced Calculus* (3) Mears
Spring—morning; summer 1956.

140 *Introduction to Analysis* (3) Nelson
Fall—evening.
Prerequisite: Mathematics 139.

141 *Introduction to Infinite Series* (3) Mears
Fall—evening.

167 *Fourier Series and Spherical Harmonics* (3)
Not offered 1956–57.
Prerequisite: Mathematics 132.

171 *Vector Analysis* (3) Taylor
Spring—evening; summer 1956.

THIRD GROUP

202 *Mathematical Logic* (3)
Not offered 1956–57.

220 *Theory of Numbers* (3)
Not offered 1956–57.

237–38 *Theory of Functions* (3–3)
A year course: credit is not given for the first half until the second half is completed.
Not offered 1956–57.

242 *Infinite Series* (3) Mears
Spring—evening.

249 *Ordinary Differential Equations* (3)

Not offered 1956–57.

250 *Integral Equations* (3)

Not offered 1956–57.

251–52 *Theory of Functions of a Real Variable* (3–3) Mears

A year course: credit is not given for the first half until the second half is completed.

Academic year—evening.

255 *Differential Geometry* (3) Taylor

Fall—evening.

257 *Theory of Groups* (3)

Not offered 1956–57.

265–66 *Modern Algebra* (3–3) Johnston

Academic year—evening.

268 *Calculus of Variations* (3)

Not offered 1956–57.

270 *Tensor Analysis* (3)

Not offered 1956–57.

277 *Partial Differential Equations* (3)

Not offered 1956–57.

278 *Introduction to Topology* (3) Heller

Spring—evening.

295–96 *Reading and Research* (3–3) The Staff

Academic year—as arranged.

299–300 *Thesis* (3–3) The Staff

MECHANICAL ENGINEERING

Benjamin Carpenter Cruickshanks, B.S. in M.E., *Professor of Mechanical Engineering, Executive Officer*
Jack Edward Walters, M.S. in M.E., Ph.D., *Professor of Engineering Administration*
Victor Szebehely, Dr.Eng., *Professorial Lecturer in Mechanical Engineering*
Glen Darwin Camp, Ph.D., *Professorial Lecturer on Engineering Administration*
Robert Irving Sarbacher, Sc.D., E.E., *Professorial Lecturer on Engineering Administration*
Gilbert Chester Jacobus, B.S. in C.E., M.B.A., LL.B., *Professorial Lecturer on Engineering Administration*
Kenneth McClure, M.S., LL.B., *Professorial Lecturer on Engineering Administration*
Rawlings Stine Poole, B.S., *Professorial Lecturer on Engineering Administration*
Charles Edward Greeley, B.S., in M.E., *Associate Professor of Mechanical Engineering*
*John Kaye, M.S. in M.E., *Associate Professor of Mechanical Engineering*
Paul Arthur Crafton, B.M.E., M.S., *Lecturer in Mechanical Engineering*
Raphael David Cahn, B.M.E., *Lecturer in Mechanical Engineering*
John Rhoads Broome, B.S., *Lecturer in Mechanical Engineering*

Bachelor of Mechanical Engineering (School of Engineering).—See pages 139–41 and 142–43 for statement of requirements.
Master of Science in Engineering (School of Engineering).—See pages 147–48 for statement of requirements.
Master of Engineering Administration.—See pages 148–50.
Mechanical Engineer (School of Engineering).—See page 150 for statement of requirements.

First Group

3 *Mechanical Drawing* (2) — Greeley

Fall: drafting (6 hours)—afternoon and evening.

Drafting-room fee, $6.

* On sabbatical leave 1956–57

4 *Descriptive Geometry* (2) Greeley

Spring: drafting (6 hours)—afternoon and evening.

Drafting-room fee, $6.

5 *Orientation and Engineering Problems* (2) The Staff

Fall—morning and evening.

Open to freshmen only. Orientation in college. Introduction to slide rule, engineering logic and ethics, engineering method of analysis, proper methods of study and work. Simple problems in engineering.

6 *Engineering Problems** (2) The Staff

Spring—morning and evening.

Simple engineering problems in statics, dynamics, energy, heat and electricity. Training in reasoning, engineering analysis, and application of mathematics to engineering problems. Prerequisite: Mechanical Engineering 5; removal of all entrance deficiencies in science and mathematics.

13–14 *Mechanism* (3–3) Cruickshanks

Academic year: lecture (2 hours), drawing (2 hours)—morning and evening.

Prerequisite: Mathematics 19. Prerequisite or concurrent registration: Mathematics 20. Drawing-room fee, $6 a semester.

SECOND GROUP

111–12 *Thermodynamics* (3–3) Cruickshanks, Greeley

Academic year—morning and evening.

With introductory study of laws of heat transmission. Prerequisite: junior status.

115–16 *Mechanical Laboratory* (2–2) Greeley

Academic year: laboratory (6 hours)—morning and evening.

Calibration of instruments; calorimetry; testing of prime movers, auxiliaries, combustion engines, and refrigerating machines. Eight-hour power-plant test required. *Mechanical Engineering 115* prerequisite: Mechanical Engineering 112; Electrical Engineering 10. Prerequisite or concurrent registration: Mechanical Engineering 133, 139. *Mechanical Engineering 116* prerequisite: Mechanical Engineering 115. Prerequisite or concurrent registration: Mechanical Engineering 132, 140. Laboratory fee, $11 a semester.

* This course should be completed before the beginning of the sophomore year.

126 *Methods of Manufacture* (2) Greeley

1956–57 and alternate years: fall—evening; 1957–58 and alternate years: fall—morning.

Foundry practices, forging, welding, machine tools, inspection, factory processes. Inspection trips required. Prerequisite: Mechanical Engineering 8 and 14; Civil Engineering 26.

127–28 *Machine Design* (2–2) Crafton

1956–57 and alternate years: academic year—afternoon; 1957–58 and alternate years: academic year—evening.

With stress-analysis computation and design periods (6 hours). Prerequisite: Mechanical Engineering 7, 8, 112; Civil Engineering 26, 136, 140. Drafting-room fee, $6 a semester.

129–30 *Power Plants* (3–3) Cruickshanks

1956–57 and alternate years: academic year—morning; 1957–58 and alternate years: academic year—evening.

Study of design, layout, installation, and operation of power plants and equipment, with emphasis on heat transmission and instrumentation. Prerequisite: Mechanical Engineering 112.

131–32 *Heating, Ventilating, Air Conditioning, and Refrigeration* (2–2) ———

1956–57 and alternate years: academic year—morning; 1957–58 and alternate years: academic year—evening.

Principles and applications. Prerequisite: Mechanical Engineering 112; Civil Engineering 26 and 136.

133 *Combustion Engines* (2) Greeley

1956–57 and alternate years: fall—evening; 1957–58 and alternate years: fall—morning.

Study of spark-ignition and compression-ignition engines, combustion, performance, fuels, knock, supercharging, and combustion charts. Inspection trips required. Prerequisite: Mechanical Engineering 112; senior status.

139 *Fluid Dynamics* (3) ———

1956–57 and alternate years: fall—morning; 1957–58 and alternate years: fall—evening.

Theory and application of fluid dynamics. Prerequisite: Mathematics 103; Mechanical Engineering 112; Civil Engineering 136.

140 *Mechanical Vibrations* (3) ———

1956–57 and alternate years: spring—morning; 1957–58 and alternate years: spring—evening.

Inertia effects, balancing, vibration phenomena. Prerequisite: Mathematics 103; Mechanical Engineering 7, 8, and 14; Civil Engineering 140.

141–42 *Management Problems* (2–2) Broome

1956–57 and alternate years: academic year—morning; 1957–58 and alternate years: academic year—evening.

Organization of an industrial enterprise; the handling and training of men. Prerequisite for Mechanical Engineering 142: Mechanical Engineering 141.

189–90 *Proseminar in Mechanical Engineering* (1–1) ———

Academic year—late afternoon.

Prerequisite for Mechanical Engineering 189; senior status. Prerequisite for Mechanical Engineering 190: Mechanical Engineering 189.

Third Group

201 *Instrumentation* (3) Crafton

1956–57 and alternate years: fall—evening.

Theory of measurement and instrumentation systems. Physical principles involved in research and commercial instrumentation. Design problems.

202 *Advanced Dynamics of Machinery* (3) Szebehely

1957–58 and alternate years.

Free, damped, and forced vibrations of mechanical systems; the dynamic response of elastic systems. Selected topics in vibration isolation and control.

203 *Advanced Fluid Dynamics* (3) Szebehely

1957–58 and alternate years.

Advanced dynamics of incompressible and compressible fluids, turbulence, and boundary layer mechanics.

204 *Heat Transfer Thermodynamics* (3) The Staff

1956–57 and alternate years: spring—evening.

Advanced problems in compression of gases and liquids; combustion. Heat transfer problems involving radiation, convection, conduction, evaporation, and condensation.

217–18 *Seminar in Engineering* (1–1) Mason

Academic year—as arranged.

299–300 *Thesis* (3–3) The Staff

ENGINEERING ADMINISTRATION

The School of Engineering also offers the following courses primarily for candidates for the degree of Master of Engineering Administration. Other courses in this program are listed under the departments of Accounting, Business and Public Administration, Geography, and Psychology.

Engineering Administration 105	*Engineer and Society* (2)
Engineering Administration 191	*Engineering Law* (3)
Engineering Administration 205	*Engineer and Society* (3)
Engineering Administration 211–12	*Communication of Ideas* (3–3)
Engineering Administration 251	*Management of Research and Development* (3)
Engineering Administration 252	*Production and Maintenance Management* (3)
Engineering Administration 260	*Managerial Statistics, Quality Control, and Standardization* (3)
Engineering Administration 261	*Economic Analysis in Engineering Planning* (3)
Engineering Administration 271	*Operations Research* (3)
Engineering Administration 272	*Operations Research—Field Work* (3)
Engineering Administration 290	*Problems in Enginering Administration* (3)

MEDICINE

Walter Andrew Bloedorn, A.M., M.D., Sc.D., *Professor of Medicine*
Thomas McPherson Brown, A.B., M.D., *Eugene Meyer Professor of Medicine, Executive Officer*
Charles Robert Lee Halley, A.B., M.D., *Clinical Professor of Medicine*
Clayton Bernard Ethridge, M.D., *Clinical Professor of Medicine*
Louis Katz Alpert, B.S., M.D., *Clinical Professor of Medicine*
Sol Katz, B.S., M.D., *Adjunct Clinical Professor of Medicine*
Joseph Francis Fazekas, B.S., M.D., *Adjunct Clinical Professor of Medicine*
Harry Eagle, A.B., M.D., *Professorial Lecturer in Medicine*
Robert William Berliner, B.S., M.D., *Professorial Lecturer in Medicine*
Henry Field, Jr., M.D., *Professorial Lecturer in Medicine*
John Coleman Nunemaker, M.S., M.D., *Professorial Lecturer in Medicine*
Monroe James Romansky, A.B., M.D., *Associate Professor of Medicine*
John McCallum Evans, A.B., M.D., *Associate Professor of Medicine*
Peter Diacoumis Comanduras, B.S., M.D., M.S. in Med., *Associate Clinical Professor of Medicine*
Clarence Richard Hartman, A.B., M.D., *Associate Clinical Professor of Medicine*
Walter Kendall Myers, B.S., M.D., *Assistant Clinical Professor of Medicine*
John Alton Reed, A.B., M.D., *Assistant Clinical Professor of Medicine*
Theodore Judson Abernethy, B.S., M.D., *Assistant Clinical Professor of Medicine*
William Travis Gibb, Jr., A.B., M.D., *Assistant Clinical Professor of Medicine*
Roy Hertz, Ph.D., M.D., *Assistant Clinical Professor of Medicine*
Samuel Ross Taggart, M.D., *Assistant Clinical Professor of Medicine*
Benjamin Manchester, M.D., *Assistant Clinical Professor of Medicine*
Pearl Holly, M.S., M.D., *Assistant Clinical Professor of Medicine*
James Joseph Feffer, A.B., M.D., *Assistant Clinical Professor of Medicine*
John Watkins Trenis, A.B., M.D., *Assistant Clinical Professor of Medicine*
Albert David Kistin, A.M., M.D., *Assistant Clinical Professor of Medicine*
Andrew Gabriel Prandoni, B.S., M.D., *Assistant Clinical Professor of Medicine*

Ruth Hechler Wichelhausen, M.D., *Assistant Clinical Professor of Medicine*
Ludwig George Lederer, M.D., Ph.D., *Assistant Clinical Professor (Research) of Medicine*
John Eldrid Smith, A.B., M.D., *Assistant Clinical Professor (Research) of Medicine*
Lawrence Elias Putnam, A.B., M.D., *Assistant Clinical Professor of Medicine*
Maurice Protas, A.B., M.D., *Associate in Medicine*
John Minor, A.B., M.D., *Associate in Medicine*
Lawrence Jay Thomas, B.S., M.D., *Associate in Medicine*
Bernard Lauriston Hardin, Jr., A.B., M.D., *Associate in Medicine*
Charles William Ordman, A.B., M.D., *Associate in Medicine*
Benjamin Calloway Jones, Jr., A.B., M.D., *Associate in Medicine*
Richard Bernard Castell, A.B., M.D., *Associate in Medicine*
Myer Harold Stolar, B.S., M.D., *Associate in Medicine*
Sam Thomson Gibson, B.S., M.D., *Associate in Medicine*
Walter Lewis Nalls, B.S., M.D., *Associate in Medicine*
Alfred Brigulio, M.D., *Associate in Medicine*
Halla Brown, M.D., *Associate in Medicine*
Ralph Bretney Miller, A.B., M.D., *Associate in Medicine*
Thomas Stone Sappington, A.B., M.D., *Associate in Medicine*
John Christian Ransmeier, A.B., M.D., *Associate in Medicine*
Samuel Jacob Nathan Sugar, Phar.G., M.D., *Associate in Medicine*
Joseph Ney, B.S., M.D., *Associate in Medicine*
Joseph Beinstein, A.B., M.D., *Associate in Medicine*
Frank Solomon Bacon, B.S., M.D., *Associate in Medicine*
Henry Dunlop Ecker, B.S., M.D., *Associate in Medicine*
Jack Jacob Rheingold, A.B., M.D., *Associate in Medicine*
Irene Gorski Tamagna, M.D., *Associate in Medicine*
Elizabeth Harman Hill, M.D., *Associate in Medicine*
John Bayne Marbury, M.D., *Associate in Medicine*
Louis Ross, M.D., *Associate in Medicine*
Frederic Dunbar Chapman, A.B., M.D., C.M., *Associate in Medicine*
John Wilmer Latimer, Jr., M.D., *Associate in Medicine*
Luther Henry Snyder, A.B., M.D., *Associate in Medicine*
Charles Wilson Jones, A.B., M.D., *Associate in Medicine*
Thomas Joseph Pekin, B.S., M.D., *Associate in Medicine*
Robert George Taylor, M.D., *Associate in Medicine*
Charles Waters Thompson, M.D., *Associate in Medicine*
James Walling Long, M.D., *Associate in Medicine*
Eugene Solomen Gladsden, B.S., M.D., *Associate in Medicine*
Maurice Mensh, M.D., *Associate in Medicine*
Arthur Rosenbaum, B.S., M.D., *Associate in Medicine*

Jarvis Edwin Seegmiller, A.B., M.D., *Associate in Medicine*
Irvin Kerlan, B.S., M.D., C.P.H., *Associate in Medicine*
Virginia Patterson Beelar, A.B., M.D., *Associate in Medicine*
Lester Sylvan Blumenthal, A.B., M.D., M.S. in Med., *Associate in Medicine*
Stanley William Kirstein, B.S., M.D., *Associate in Medicine*
James Francis Ambury, B.S., M.D., *Associate in Medicine*
Robert Norwood Coale, B.S., M.D., *Associate in Medicine*
Israel Kessler, M.S., M.D., *Associate in Medicine*
Francis James Murray, B.S., M.D., *Associate in Medicine*
Edwin Pearson Parker III, B.S., M.D., *Associate in Medicine*
Morris Hirsh Rosenberg, A.B., M.D., *Associate in Medicine*
John William Du Chez, M.D., *Associate in Medicine*
Warren Daniel Brill, B.S., M.D., *Associate in Medicine*
Marvin Fuchs, B.S., M.D., *Associate in Medicine*
William Jack Weaver, Jr., A.B., M.D., *Associate in Medicine*
Ruth Boschwitz Benedict, A.B., M.D., *Associate in Medicine*
Harold Martin Silver, A.B., M.D., *Associate in Medicine*
Thomas James Kennedy, Jr., B.S., M.D., *Associate (Research) in Medicine*
Adrian Michael Hogben, M.D., Ph.D., *Associate (Research) in Medicine*
Jack Orloff, M.D., *Associate (Research) in Medicine*
Ernest Cotlove, B.S., M.D., *Associate (Research) in Medicine*
James Irving Boyd, M.D., M.S., *Lecturer in Medicine*
James Theodore Burns, M.D., *Clinical Instructor in Medicine*
Charles Edward Law, M.D., *Clinical Instructor in Medicine*
Emil Herbert Bauersteld, A.B., M.D., *Clinical Instructor in Medicine*
William Otis Bailey, Jr., M.D., *Clinical Instructor in Medicine*
Harry Clark Bates, B.S., M.D., *Clinical Instructor in Medicine*
Jeanne Cecile Bateman, A.B., M.D., *Clinical Instructor in Medicine*
Thomas Lees Hartman, A.M., M.D., *Clinical Instructor in Medicine*
Boris Rabkin, A.B., M.D., *Clinical Instructor in Medicine*
Morton Harold Rose, M.D., *Clinical Instructor in Medicine*
George Sharpe, A.B., M.D., *Clinical Instructor in Medicine*
Cyril Augustus Schulman, B.S., M.D., *Clinical Instructor in Medicine*
Louis Aleck Craig, Jr., A.B., M.D., *Clinical Instructor in Medicine*
Abraham Wolffe Danish, A.B., M.D., *Clinical Instructor in Medicine*
Milton Gusack, A.B., M.D., *Clinical Instructor in Medicine*
William Lewis, M.D., *Clinical Instructor in Medicine*
Alvin Seltzer, B.S., M.D., *Clinical Instructor in Medicine*
Adolph Friedman, A.B., M.D., *Clinical Instructor in Medicine*
Samuel Dennis Loube, A.B., M.D., *Clinical Instructor in Medicine*
Alvin Edward Parrish, M.D., *Clinical Instructor in Medicine*
Nahum Raphael Shulman, M.D., *Clinical Instructor in Medicine*

Stewart William Bush, B.S., M.D., *Clinical Instructor in Medicine*
Alfred Baer, A.B., M.D., *Clinical Instructor in Medicine*
Jack Kleh, A.B., M.D., *Clinical Instructor in Medicine*
James William Hollingsworth, M.D., *Clinical Instructor in Medicine*
Edward Luke Rea, A.B., M.D., *Clinical Instructor in Medicine*
William Robert Felts, Jr., B.S., M.D., *Clinical Instructor in Medicine*
James Packard Mann, M.D., *Clinical Instructor in Medicine*
Maurice Arthur Sislen, A.B., M.D., *Clinical Instructor in Medicine*
William Holmes Crosby, Jr., A.B., M.D., *Clinical Instructor in Medicine*
Joseph Hicks Watson, B.S., M.D., *Clinical Instructor in Medicine*
Conrad Gossels, M.D., *Clinical Instructor in Medicine*
Charles Joseph Savarese, Jr., A.B., M.D., *Clinical Instructor in Medicine*
James Eliot Chapman, M.D., *Clinical Instructor in Medicine*
Bernard Robert Cooperman, A.B., M.D., *Clinical Instructor in Medicine*
Marshall Hannis Jacobson, A.B., M.D., *Clinical Instructor in Medicine*
Gottfried Karl Duschak, M.D., *Clinical Instructor in Medicine*
Norman Hartley Rubenstein, M.D., *Clinical Instructor in Medicine*
Leonard Laster, A.B., M.D., *Clinical Instructor in Medicine*
Howard Otis Mott, A.B., M.D., *Clinical Instructor in Medicine*
Max Gimble Sherer, M.S., M.D., *Clinical Instructor in Medicine*
Jesse Leonard Steinfeld, B.S., M.D., *Clinical Instructor in Medicine*
Donald Morgan Watkin, A.B., M.D., *Clinical Instructor in Medicine*
James Barnes Wyngaarden, M.D., *Clinical Instructor in Medicine*
Edward Adelson, B.S., M.D., *Clinical Instructor in Medicine*
Kurt Julius Isselbacher, M.D., *Clinical Instructor in Medicine*
Stanton Segal, M.D., *Clinical Instructor in Medicine*
Gerald John Fisher, A.B., M.D., *Clinical Instructor in Medicine*
William Leete Stone, A.B., M.D., *Clinical Instructor in Medicine*
Ted Clemens, Jr., B.S., M.D., *Clinical Instructor in Medicine*
James Bernard Field, M.D., *Clinical Instructor in Medicine*
Agamemnon Despopoulos, M.D., *Clinical Instructor in Medicine*
Robert Proulx Heaney B.S., M.D., *Clinical Instructor in Medicine*
George Archibald Kelser, Jr., B.S., M.D., *Clinical Instructor in Medicine*
Jacob Robbins, A.B., M.D., *Clinical Instructor in Medicine*
Bernard Howard Ostrow, A.B., M.D., *Clinical Instructor in Medicine*
James Charles Mandes, A.B., M.D., *Clinical Instructor in Medicine*

106 *Living Anatomy* The Staff

Spring—1 hour a week.

An introduction to physical diagnosis, with special emphasis on topographical anatomy.

236 *Clinical Microscopy* — The Staff

Spring—3 hours a week.

Conferences and studies in the clinical application of laboratory examinations of blood, body fluids, exudates, excreta.

242 *Physical Diagnosis* — The Staff

Spring—6 hours a week.

Covers not only theoretical but practical application of principles of physical diagnosis as related to examination of patients.

243–44 *Introduction to Medicine* — The Staff

Academic year—2 hours a week.

Lectures covering the principles of internal medicine preparatory to clinical studies and training in the inpatient and outpatient services.

320 *Medical Jurisprudence* — The Staff

Spring—1 hour a week.

Lectures on the legal and ethical rights of physicians, and on the legal problems with which the physician comes in contact.

325–26 *Clinical Clerkships* — The Staff

Eight weeks as arranged during academic year.

Training with bed patients under individual instruction designed to develop ability in examination of patients and case taking as well as practice in clinical microscopy. D. C. General Hospital.

327–28 *Clinical Pathological Conferences I* — The Staff

Academic year—1 hour a week.

Conferences are held at the School of Medicine. Case histories are presented and discussed by the students and members of the staff. Clinical, laboratory, and necropsy findings are compared.

339–40 *Therapeutic Conferences I* — Staff of Medicine and Pharmacology

Academic year—1 hour a week.

Conferences designed to emphasize the application of pharmacological principles to the problems of clinical medicine. University Hospital.

349–50 *Medical Conferences* — The Staff

Academic year—2 hours a week.

421–22 *Outpatient Clinics* — The Staff

Six weeks as arranged during academic year.

Individual case studies under personal supervision of the Staff. Daily clinics on current medical problems and seminars stressing physiological aspects of diseases. Individual examinations and instruction in medical specialties. University Hospital.

423–24 *Clinical Clerkship* — The Staff

Six weeks as arranged during academic year.

University and Mt. Alto hospitals.

427–28 *Clinical Pathological Conferences II* — The Staff

Academic year—1 hour a week.

Continuation of Medicine 327–28.

429–30 *Clinical Pathological Conferences III* — Peery, Halley

Academic year—1 hour a week.

Conferences are held at the University Hospital. Attendance is required of students during their medical clerkships there.

431 *Forensic Medicine* — The Staff

Fall—3 hours a week for four weeks.

Organized in conjunction with the University Law School for the purpose of acquainting medical students with their legal responsibilities.

NEUROLOGY AND NEUROLOGICAL SURGERY

James Winston Watts, B.S., M.D., *Professor of Neurological Surgery, Executive Officer*

Harold Stevens, Ph.D., M.D., *Professor of Neurology*

Seymour Solomon Kety, A.B., M.D., *Professorial Lecturer in Neurology*

Hyman David Shapiro, M.D., *Associate Clinical Professor of Neurology*

Robert Henry Groh, B.S., M.D., *Associate Clinical Professor of Neurology*

Jonathan Marshall Williams, M.D., *Assistant Clinical Professor of Neurological Surgery*

James Peter Murphy, B.S., M.D., *Assistant Clinical Professor of Neurological Surgery*

Hugo Victor Rizzoli, A.B., M.D., *Assistant Clinical Professor of Neurological Surgery*

Anatole Stephen Debakan, M.D., Ph.D., *Assistant Clinical Professor of Neurology*

Gordon Millichap, B.S., M.D., *Assistant Clinical Professor of Neurology*

Paul Chodoff, A.B., M.D., *Assistant Clinical Professor of Neurology*

George Davis Weickhardt, M.D., *Associate in Neurology*

Harvey Ammerman, B.S., M.D., *Associate in Neurological Surgery*

James Francis Hammill, B.S., M.D., *Clinical Instructor in Neurology*

Garrett Swain, M.D., *Clinical Instructor in Neurological Surgery*

Marvin Curtis Korengold, D.D.S., B.S., M.D., *Clinical Instructor in Neurology*

John Thomas Lord, A.B., M.D., C.M., *Clinical Instructor in Neurological Surgery*

Delora Fowler Mott, M.D., *Clinical Instructor in Neurology*

Cosimo Ajmone Marsan, M.D., *Clinical Instructor in Neurology*

249 *Neurology: Basic (elective)* Stevens, Williams

Fall—1 hour a week.

Methods used to study the form and function of the nervous system. Lectures and laboratory demonstrations.

250 *Neurology* Stevens, Shapiro

Spring—1 hour a week.

Introductory lectures on clinical neurology with specimens, lantern slides, and motion pictures.

331 *Neurology and Neurological Surgery* — Watts, Stevens

Fall—1 hour a week.

Clinical lectures and demonstrations.

333–34 *Neurology and Neurological Surgery, Clinical Clerkship* — Stevens, Williams, Ammerman

In conjunction with 335–36. Two weeks in rotation as arranged during academic year.

Instruction in history, physical examination, ordinary clinical procedures. Attendance at neurosurgical operations. Six students in rotation. D. C. General Hospital.

335–36 *Neurological Conference* — Stevens and Staff

In conjunction with 333–34. Two weeks in rotation as arranged during academic year.

Clinical conference one afternoon a week followed by clinicopathologic study of specimens from current necropsies. Six students in rotation. D. C. General Hospital.

431–32 *Neurology and Neurological Surgery Clinic* — Shapiro, Rizzoli

Two hours a week for three weeks in rotation as arranged during academic year.

Neurological outpatient clinic. Consultation of staff on ambulatory cases, demonstration of diagnostic procedures, disposition of neuropsychiatric cases, ward rounds. Six students in rotation. University Hospital.

433–34 *Clinical Neurology* — Groh

Two hours a week for three weeks in rotation as arranged during academic year.

Neurological inpatient examinations and demonstrations. Six students in rotation. St. Elizabeths Hospital.

436 *Neurological Surgery (elective)* — Murphy and Staff

Spring—1 hour a week.

Lectures and motion picture demonstration of neurosurgical problems.

OBSTETRICS AND GYNECOLOGY

John Parks, M.S., M.D., *Professor of Obstetrics and Gynecology, Executive Officer*

Henry Lauran Darner, A.B., M.D., *Clinical Professor of Obstetrics and Gynecology*

George Nordlinger, A.B., M.D., *Clinical Professor of Obstetrics and Gynecology*

Robert Henry Barter, B.S., M.D., *Associate Professor of Obstetrics and Gynecology*

Samuel Mayer Dodek, A.M., M.D., *Associate Clinical Professor of Obstetrics and Gynecology*

Jeremiah Keith Cromer, M.D., *Assistant Clinical Professor of Obstetrics and Gynecology*

James Albert Dusbabek, M.D., *Associate in Obstetrics and Gynecology*

Clarence Kendall Fraser, Ph.B., M.D., *Associate in Obstetrics and Gynecology*

Barton Winters Richwine, M.D., *Associate in Obstetrics and Gynecology*

Floyd Sterling Rogers, M.D., *Associate in Obstetrics and Gynecology*

Rufus Martin Roll, A.B., M.D., *Associate in Obstetrics and Gynecology*

Caroline Jackson, A.M., M.D., *Associate in Obstetrics and Gynecology*

James Glover Sites, M.D., *Instructor in Obstetrics and Gynecology*

Julius Robert Epstein, M.D., *Clinical Instructor in Obstetrics and Gynecology*

Morton Selwyn Kaufman, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*

William Thurston Lady, M.D., *Clinical Instructor in Obstetrics and Gynecology*

Jed Williams Pearson, Jr., A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*

Samuel Hazen Shea, M.D., *Clinical Instructor in Obstetrics and Gynecology*

Thomas Miles Leonard, Ph.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*

Albert Seymour Bright, M.D., *Clinical Instructor in Obstetrics and Gynecology*

Shirley Sue Martin, M.D., *Clinical Instructor in Obstetrics and Gynecology*

Neel Jack Price, B.S., M.D., *Clinical Instructor in Obstetrics and Gynecology*

Roland Essig Bieren, M.D., *Clinical Instructor in Obstetrics and Gynecology*
Alexander LeSueur Russell, M.D., *Clinical Instructor in Obstetrics and Gynecology*
Thomas Ashton Wilson, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*
Marvin Peace Footer, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*
Donald Walters, B.S., M.D., *Clinical Instructor in Obstetrics and Gynecology*
Joseph Marshall Friedman, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*
Leon McNeely Liverett, B.S., M.D., *Clinical Instructor in Obstetrics and Gynecology*
William Prentiss McKelway, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*
William Hurlbert Cooper, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*

254 *Introduction to Obstetrics and Gynecology* — Dodek, Fraser

Spring—1 hour a week.

Lectures and demonstrations on the development and physiology of the female reproductive system and the management of normal pregnancy.

301–2 *Manikin Demonstrations* — Footer

One hour a week for eight weeks in rotation as arranged during academic year.

The mechanism of labor and various types of operative delivery demonstrated to sections of the junior class. D. C. General Hospital.

337–38 *Obstetrics and Gynecology* — The Staff

Academic year—2 hours a week.

Lectures and demonstrations on the principles of obstetrics and gynecology.

351–52 *Clinical Clerkship* — The Staff

Four weeks during the academic year as arranged.

Clerkship with patients, including ward rounds, operating room demonstrations, and weekly clinic. D. C. General Hospital.

439–40 *Clinic in Obstetrics and Gynecology* Parks, Barter, Sites

One hour a week for eight weeks in rotation as arranged during academic year.

Student presentation and discussion of patient problems. Demonstration of equipment used in obstetric and gynecologic practice.

441–42 *Clinical Obstetrics* The Staff

Academic year—as arranged.

Students participate in prenatal and postnatal clinic care, observe the course of labor and deliver patients under supervision, observe and participate in the gynecological clinics and operating rooms of the University and D. C. General hospitals, attend bi-weekly departmental conferences and daily ward rounds in the University and D. C. General hospitals.

443–44 *Clinical Gynecology* The Staff

Eight weeks in rotation as arranged during academic year.

Students observe and participate in the gynecological clinics and operating rooms of the University and D. C. General hospitals.

OPHTHALMOLOGY

Ronald Atmore Cox, A.B., M.D., *Professor of Ophthalmology, Executive Officer*
Ernest Alfred Watson Sheppard, M.D., C.M., *Clinical Professor of Ophthalmology*
Richard Wallace Wilkinson, A.B., M.D., M.S. in Med., *Assistant Clinical Professor of Ophthalmology*
Carmon Robert Naples, B.S., M.D., *Associate in Ophthalmology*
Walter Joseph Romejko, M.D., *Associate in Ophthalmology*
William Paxson Chalfant, Jr., M.D., *Associate in Ophthalmology*
William Joseph Graham Davis, A.B., M.D., *Associate in Ophthalmology*
Robert Edward duPrey, B.S., M.D., *Associate in Ophthalmology*
Robert Day, A.B., M.D., *Associate in Ophthalmology*
Melvin Gustavus Alper, A.B., M.D., *Clinical Instructor in Ophthalmology*
Oscar Lavine, M.D., *Clinical Instructor in Ophthalmology*

352 *Ophthalmology* — The Staff

Spring—one hour a week for sixteen weeks as arranged.

Lecture course presenting aspects of all the principles of ophthalmology.

447 *Clinic* — The Staff

Fall—as arranged.

During medical outpatient service, each student is given individual instruction in the ophthalmological aspects of systemic disease. University Hospital.

OTOLARYNGOLOGY

Aubrey David Fischer, M.D., *Associate Clinical Professor of Otolaryngology*
James Jerry McFarland, Jr., B.S., M.D., *Assistant Clinical Professor of Otolaryngology, Executive Officer*
Catharine Birch, A.B., M.D., *Associate in Otolaryngology*
Jack Louis Levine, M.D., *Associate in Otolaryngology*
Morris Edward Krucoff, B.S., M.D., *Associate in Otolaryngology*
Aram Glorig, Jr., B.S., M.D., *Clinical Instructor in Otolaryngology*
Russel Smith Page, Jr., A.B., M.D., *Clinical Instructor in Otolaryngology*
Willard Beecher Walters, B.S., M.D., *Clinical Instructor in Otolaryngology*
Harry Ward McCurdy, A.B., M.D., *Clinical Instructor in Otolaryngology*
Joseph Aziz Sabri, A.B., M.D., *Clinical Instructor in Otolaryngology*
William MacLohon Trible, A.B., M.D., *Clinical Instructor in Otolaryngology*

351 *Otolaryngology* — The Staff

Fall—1 hour a week for fourteen weeks.

Lectures and demonstrations on anatomy, physiology, and diseases of the ear, nose, and throat.

354 *Bronchoscopy* — The Staff

Spring—1 hour a week for two weeks.

A series of lectures on the fundamental principles and the use of instruments, including both the bronchoscope and esophagoscope.

356 *Clinic* — The Staff

Spring—1½ hours a week.

Practical clinical instruction in the diagnosis and treatment of diseases of the ear, nose, and throat. D. C. General Hospital.

PATHOLOGY

Thomas Martin Peery, A.B., M.D., *Professor of Pathology, Executive Officer*
Daniel Leigh Weiss, A.B., M.D., *Adjunct Clinical Professor of Pathology*
Frank Nelson Miller, B.S., M.D., *Associate Professor of Pathology*
William Newman, A.B., M.D., *Assistant Professor of Pathology*
Lois Irene Platt, A.B., M.D., *Clinical Instructor in Pathology*

Special Staff for Demonstrations

John Stewart Howe, A.B., M.D., *Assistant Clinical Professor of Pathology*
Erving Francis Geever, M.D., Ph.D., *Assistant Clinical Professor of Pathology*
Lorenz Eugene Zimmerman, A.B., M.D., *Associate in Pathology*
Raymond Georges Gottschalk, B.S., M.D., *Associate in Pathology*
Franklin Martin, Jr., A.B., M.D., C.M., M.S. in Neurol., *Associate in Pathology*
Richard Emery Palmer, A.B., M.D., *Associate in Pathology*
William Francis Enos, A.B., M.D., *Clinical Instructor in Pathology*
Robert Joel Fink, M.D., *Clinical Instructor in Pathology*
Lester Walter Fix, M.D., *Clinical Instructor in Pathology*
Edward Matthew Rehak, B.S., M.D., *Clinical Instructor in Pathology*

Special Lecturers

Elson Bowman Helwig, B.S., M.D., *Assistant Chief, Pathology Division, Armed Forces Institute of Pathology*
Hans Frank Smetana, M.D., *Pathologist, Armed Forces Institute of Pathology*
Elizabeth Mapelsden Ramsey, A.B., M.D., *Research Associate and Pathologist, Department of Embryology, Carnegie Institution of Washington*
Lent Clifton Johnson, B.S., M.D., *Pathologist, Armed Forces Institute of Pathology*

259–60 *Pathology* Peery, Miller

Fall—9 hours a week; spring—2 hours a week.

General pathology of inflammations, degenerations, malformations, and neoplasms. Special pathology of the organs and specific diseases.

The laboratory work consists of the gross and microscopic study of diseased tissue. Special emphasis is placed on the inter-relationships of the various pathologic changes and their correlation with symptoms and physical signs.

261–62 *Necropsy* — The Staff

Academic year—as arranged.

Students are required to attend and assist in the performance of necropsies at the University Hospital.

263–64 *Demonstrations in Pathology* — Special Staff

Academic year—1 hour a week.

Gross specimens of representative cases from various hospitals are demonstrated and discussed.

267–68 *Seminars in Pathology (elective)* — Special Lecturers

Academic year—as arranged.

Advanced lectures are presented as arranged on special topics in pathology.

320 *Medical Jurisprudence* — Miller

Spring—1 hour a week.

Forensic pathology and toxicology. The legal and ethical rights and responsibilities of physicians. Legal problems in medicine.

323–24 *Surgical Pathology* — Weiss

Academic year—1 hour a week.

Weekly conferences are held with the student group assigned to the surgical clerkship, reviewing current surgical specimens.

327–28 *Clinical Pathological Conference I* — The Staff

Academic year—1 hour a week.

Conferences are held at the School of Medicine. Case histories are presented and discussed by the students and members of the staff. Clinical, laboratory, and necropsy findings are compared.

427–28 *Clinical Pathological Conference II* — The Staff

Academic year—1 hour a week.

Continuation of Pathology 327–28.

429–30 *Clinical Pathological Conference III* — The Staff

Academic year—1 hour a week.

Conferences are held at the University Hospital. Attendance is required of students during the medical clerkships there.

492 *Surgical Pathology* Newman

Spring—1 hour a week.

A systematic study of the gross and microscopic changes in the organs and tissues commonly removed surgically.

493–94 *Pathology Clerkship (elective)* Peery, Miller, Newman

Academic year—as arranged.

A limited number of students received training in surgical pathology and necropsies in the laboratories of the University Hospital.

PEDIATRICS

Preston Alexander McLendon, B.S., M.D., *Professor of Pediatrics. Executive Officer*

Margaret Mary Nicholson, A.B., M.D., *Clinical Professor of Pediatrics*

Edward Lewis, M.D., *Clinical Professor of Pediatrics*

William Staton Anderson, A.B., M.D., *Clinical Professor of Pediatrics*

Leroy Edward Hoeck, M.D., *Adjunct Clinical Professor of Pediatrics*

John Augustine Washington, B.S., M.D., *Associate Clinical Professor of Pediatrics*

Reginald Spencer Lourie, B.S., M.D., Med. Sc.D., *Associate Clinical Professor of Pediatric Psychiatry*

Joseph Michael LoPresti, B.S., M.D., *Assistant Professor of Pediatrics*

Mabel Harlakenden Grosvenor, A.B., M.D., *Assistant Clinical Professor of Pediatrics*

Aaron Nimetz, A.B., M.D., *Assistant Clinical Professor of Pediatrics*

George Maksim, M.D., M.S. in Ped., *Assistant Clinical Professor of Pediatrics*

William Allen Howard, A.B., M.D., *Assistant Clinical Professor of Pediatrics*

John Howell Peacock, B.S., M.D., *Associate in Pediatrics*

Maynard Irving Cohen, A.B., M.D., *Associate in Pediatrics*

Mary Katherine Laurence Sartwell, A.B., M.D., *Associate in Pediatrics*

Allan Bertram Coleman, M.D., *Associate in Pediatrics*

Charles Frederick Stiegler, A.B., M.D., *Associate in Pediatrics*

Hugh Gambel Clark, A.B., M.D., *Associate in Pediatrics*

Adrian Recinos, Jr., B.S., M.D., *Associate in Pediatrics*

Robert Edward Martin, M.D., *Associate in Pediatrics*

Charles Richard Webb, B.S., M.D., *Associate in Pediatrics*

William Stark, A.B., M.D., *Associate in Pediatric Psychiatry*

Margaret Frances Gutelius, A.B., M.D., *Associate in Pediatrics*

Archibald Rich MacPherson, A.B., M.D., *Associate in Pediatrics*

Roland Wingate Penick, M.D., *Instructor in Pediatrics*

Herbert Harold Diamond, M.D., *Clinical Instructor in Pediatrics*

Reginald Henry Mitchell, M.D., *Clinical Instructor in Pediatrics*

Robert Orr Warthen, M.D., *Clinical Instructor in Pediatrics*

Emilie Annabelle Black, B.S., M.D., *Clinical Instructor in Pediatrics*

Robert Harper Anderson, M.D., *Clinical Instructor in Pediatrics*

Warren Godfrey Preisser, A.B., M.D., *Clinical Instructor in Pediatrics*

Sanford Leon Leikin, M.D., *Clinical Instructor in Pediatrics*

Bennett Olshaker, A.B., M.D., *Clinical Instructor in Pediatric Psychiatry*

Harold Taylor Yates, M.D., *Clinical Instructor in Pediatrics*
Roger Bergstrom, M.D., *Clinical Instructor in Pediatrics*
George Joel Cohen, M.D., *Clinical Instructor in Pediatrics*

Special Lecturer

Myron Ezra Wegman, A.B., M.D., M.P.H., *Director, Division of Education and Training, Pan American Sanitary Bureau, Regional Office for the Americas of World Health Organization;* Pediatrics

256 *Pediatrics* — McLendon and Staff

Spring—2 hours a week.

Lectures on physiology of the newborn, development, infant nutrition, diseases of the newborn, common anomalies and system illnesses of infancy and childhood. Medical School.

357–58 *Clinical Clerkship—General Pediatrics* — LoPresti and Staff

Two weeks as arranged during academic year.

Introduction to clinical pediatrics. Emphasis on bedside discussion and group seminars including the newborn. Ward rounds. Five students in rotation. D. C. General Hospital.

359–60 *Clinical Clerkship—Contagious Diseases* — LoPresti and Staff

Two weeks as arranged during academic year.

Conferences and bedside discussion on contagious and infectious diseases. Prevention and quarantine measures. Five students in rotation. D. C. General Hospital.

361–62 *Clinical Conference I* — McLendon and Staff

Academic year—1 hour a week.

Required. Presentation and discussion by students of current patient problems. D. C. General Hospital.

363–64 *Ward Rounds* — Nicholson, LoPresti, and Staff

Academic year—as arranged.

Bi-weekly ward rounds, with students and Resident Staff. D. C. General Hospital.

365–66 *Psychiatry* — Lourie and Staff

Academic year—as arranged.

Lectures on normal behavior and emotional development. Clinical case analysis. Second, third, and fourth years.

457–58 *Clinical Clerkship* — Anderson and Staff

Six weeks as arranged during academic year.

Full time, including assignment to night and holiday admissions. Case studies on wards under direct Resident supervision. Ward rounds with Staff and Residents. Twelve students. Children's Hospital.

459–60 *Outpatient Clinics* — Gutelius and Staff

Academic year—as arranged.

Work in Medical and Specialty clinics including surgery, allergy, X-ray, child welfare, cardiology, dermatology, neurology, and child guidance. Children's Hospital.

461–62 *Clinical Pathological Conferences* — The Staff

Academic year—1 hour a week.

Clinical and pathological discussion of recent patient history and laboratory data. Children's Hospital.

463–64 *Section Conferences* — The Staff

Academic year—twice a week.

Discussion of clinical problems of diagnosis and treatment of current patients. Children's Hospital.

465–66 *Section Conferences* — The Staff

Academic year—1 hour a week.

Surgical diagnosis, pre- and post-operative management. Children's Hospital.

467–68 *Clinical Conference II* — McLendon and Staff

Academic year—1 hour a week.

Required. Case presentation by students. Staff and student discussion of diagnosis and management. Medical School.

469–70 *Child Guidance and Development* — Lourie

Academic year—as arranged.

Lectures to second year class. Clerkship in fourth year including Well Baby Clinic. Group and class conferences.

PHARMACOLOGY

Paul Kenneth Smith, Ph.D., *Professor of Pharmacology, Executive Officer*
Ralph Grafton Smith, M.D., Ph.D., *Clinical Professor of Pharmacology*
Bernard Beryl Brodie, Ph.D., *Professorial Lecturer in Pharmacology*
Harold George Mandel, Ph.D., *Associate Professor of Pharmacology*
Gertrude Diane Maengwyn-Davies, Ph.D., *Associate Research Professor of Pharmacology*
Clarke Davison, Ph.D., *Assistant Professor of Pharmacology*
Moreshwar Vithal Nadkarni, Ph.D., *Assistant Research Professor of Pharmacology*
Eberhard Georg Trams, Ph.D., *Assistant Research Professor of Pharmacology*

SPECIAL LECTURER IN PHARMACOLOGY

William Vincent Crahan Leahy, Ph.D., *Assistant Chief, Radioisotope Service, Veterans Administration Hospital, Washington, D. C.*

Master of Arts or *Master of Science in the field of Pharmacology (Columbian College).*—Prerequisite: a Bachelor of Arts or Bachelor of Science degree. The undergraduate program must include the following courses, or the equivalent: Biology or Zoology 1–2; Physics 6, 7, 8; Chemistry 11–12, 22, 151–52. Biochemistry 221–22 and Physiology 115, 117 are recommended as the undergraduate electives if the candidate wishes to complete the work for the Master's degree in one year.

Required: the general requirements as stated on pages 89–92. The thirty hours of required work must include Biochemistry 221–22; Physiology 115, 117; Pharmacology 261, 263, 267–68, 269–70, 299–300. The remaining courses may be selected from Biochemistry 224, 225–26, 232; Physiology 150; Bacteriology 112, 209, 230; Pharmacology 280.

Master of Arts or *Master of Science in the field of Chemotherapy (Columbian College).*—Prerequisite: A Bachelor of Arts or a Bachelor of Science degree. The undergraduate program must include the following courses or the equivalent: Biology or Zoology 1–2, 41–42; Physics 6, 7; Chemistry 11–12, 22, 151–52. Biochemistry 221–22 is recommended as an undergraduate elective if the candidate wishes to complete the work for the Master's degree in one year.

Required: Bacteriology 112; Biochemistry 221–22; Pharmacology 262, 267–68, 269–70, 299–300. The remaining courses may be selected from Bacteriology 209, 229, 230; Biochemistry 224, 225, 226, 232; Physiology 115, 117; Pharmacology 261, 263.

Doctor of Philosophy (Graduate Council).—See page 97.

261 *Pharmacology* (5) The Staff

Fall—5 hours a week.

Lectures and conferences concerning the interaction of drugs and biological systems as a basis for the rational therapy of disease. Open to qualified nonmedical students.

262 *Chemotherapy* (1) The Staff

Spring—1 hour a week.

Continuation of Pharmacology 261.

263 *Pharmacology Laboratory* (1) The Staff

Fall—3 hours a week.

Laboratory instruction and demonstrations designed to complement Pharmacology 261. Open to qualified nonmedical students.

267–68 *Pharmacological Research* (arr.) The Staff

Academic year—as arranged.

Primarily for those properly qualified graduate and medical students seeking careers in pharmacology.

269–70 *Pharmacology Seminar* (1–1) The Staff

Academic year—2 hours a week.

Recent advances in pharmacology. For those interested in pharmacological research. Open to qualified nonmedical students.

279–80 *Special Methods in Research* (arr.) The Staff

Academic year—as arranged.

A course to familiarize the student with advanced biochemical, microbiological, and physiological methods employed in pharmacological investigations. Open to qualified nonmedical students.

299–300 *Thesis* (3–3) The Staff

Academic year—as arranged.

Required of Master of Arts and Master of Science candidates.

339–40 *Therapeutic Conferences I* Staff of Pharmacology and Medicine

Academic year—1 hour a week.

Conferences designed to emphasize the application of pharmacological principles to the problems of clinical medicine.

PHARMACY

Charles Watson Bliven, M.S., *Professor of Pharmacy, Executive Officer*
Salvatore Joseph Greco, Ph.D., *Associate Professor of Pharmacy*
Robert Meyer Leonard, Ph.D., *Associate Professor of Pharmacology and Pharmacognosy*
Franklin Dero Cooper, M.S., *Assistant Professor of Hospital Pharmacy*
Samuel Meyer Schwartz, B.S. in Phar., *Assistant Professor of Pharmaceutical Chemistry*
Carson Gray Frailey, A.B., LL.B., *Lecturer on Pharmaceutical Law*

Special Lecturers

William Paul Briggs, M.S., Sc.D., LL.D., *Executive Director and Secretary, American Foundation for Pharmaceutical Education;* Pharmacy Training
Frederick John Cullen, Phar.G., M.D., *Executive Vice-President, The Proprietory Association;* Drug Manufacture
John Christian Krantz, Jr., Ph.D., *Professor of Pharmacology, University of Maryland;* Pharmacological Research
Justin Lawrence Powers, Ph.D., *Chairman, Committee on National Formulary, American Pharmaceutical Association;* Official Drug Standards
Nevis Eugene Cook, B.S., B.S. in Phar., *Assistant to the Commissioner, Food and Drug Administration;* Drug Control
Robert Philip Fischelis, B.S., Phar.D., Sc.D., *Secretary and General Manager, American Pharmaceutical Association;* Pharmaceutical Organizations
Daniel Lamont Seckinger, M.D., Dr.P.H., *Director of Public Health, District of Columbia;* Hygiene and Sanitation
PGad Bryan Morehouse, LL.M., A.B., *Assistant General Counsel in Charge of Compliance, Federal Trade Commission;* Drug Trade Regulation
Louis Edward Kazin, Phar.G., *Associate Editor, Drug Topics;* Contemporary Pharmacy
Karl Bambach, Ph.D., *Executive Vice-President, American Drug Manufacturers Association;* Pharmaceutical Industry

Bachelor of Science in Pharmacy (School of Pharmacy).—Prerequisite: the Pharmacy curriculum in the Junior College, see pages 67–68. The requirements for the degree are stated on pages 154–57.

Master of Science in Pharmacy (School of Pharmacy).—Prerequisite: the degree of Bachelor of Science from an accredited institution. The requirements for the degree are stated on pages 157–59.

First Group

1–2 *History and Literature of Pharmacy* (2–1) Bliven

Academic year—morning.

Orientation in pharmacy; a survey of the development of the profession of pharmacy and the literature of pharmacy.

21–22 *General Pharmacy* (4–4) Greco, Cooper

First half: lecture (3 hours), laboratory (3 hours)—morning. *Second half:* lecture (2 hours), laboratory (6 hours)—afternoon.

Essential pharmaceutical processes; the theory and manufacture of pharmacopeial and formulary galenical preparations; the pharmaceutical usage of certain classes of substances and preparations. Laboratory fee: Pharmacy 21, $11; Pharmacy 22, $18.

23 *Pharmacognosy* (3) Leonard

Fall: lecture (2 hours)—morning; laboratory (3 hours)—morning and afternoon.

Macroscopic and microscopic. Prerequisite: Botany 1. Laboratory fee, $11.

25 *Pharmaceutical Calculations* (3) Bliven

Fall—morning.

The system of weights and measures and their application in the practice of pharmacy.

Second Group

101 *Inorganic Pharmaceutical Chemistry* (3)

Fall: lecture (2 hours)—morning, laboratory (3 hours)—afternoon

Inorganic chemistry as it applies to pharmacy. Study of reactions, preparations, and incompatibilities of inorganic pharmaceuticals. Prerequisite or concurrent registration: Chemistry 21. Laboratory fee, $11

Greco

102 *Dispensing Pharmacy* (4)

Spring: lecture (2 hours), laboratory (6 hours)—afternoon.

Compounding of typical prescriptions and a study of incompatibilities. Prerequisite: Pharmacy 22; concurrent registration: Pharmacy 110. Laboratory fee, $18.

Greco

103 *Dispensing Pharmacy* (4)

Fall: lecture (2 hours)—morning, laboratory (6 hours)—afternoon.

Continuation of Pharmacy 102. Laboratory fee, $18.

105–6 *Pharmacology I* (2–2) Leonard

Academic year—afternoon.

The general principles of pharmacology; locally acting drugs; chemotherapeutic agents; antibiotics; antianemia drugs; endocrine drugs; vitamins. Prerequisite or concurrent registration: Physiology 115.

107 *Pharmacy Accounting* (3) Koustenis

Fall—morning.

The financial records required in the operation of a pharmacy.

110 *Chemistry and Pharmacy of Medicinal Products* (3) ———

Spring—morning.

A study of the chemistry, structural relationship to action, and uses of the official and important non-official synthetic and natural organic medicinal compounds. Prerequisite or concurrent registration: Chemistry 152.

111 *Chemistry and Pharmacy of Medicinal Products* (3) ———

Fall: lecture (2 hours)—morning, laboratory (3 hours)—afternoon.

A continuation of Pharmacy 110, including laboratory work on the synthesis, chemical and physical properties, and incompatibilities of important organic medicinal products. Prerequisite: Pharmacy 110. Laboratory fee, $15.

165–66 *Pharmacology II* (3–3) Leonard

First half: fall—morning. *Second half:* lecture (2 hours)—morning, laboratory (4 hours)—afternoon.

Drugs acting on the central nervous system, the autonomic nervous system, and on specific tissues; toxicology; diagnostic drugs; biological assays. Prerequisite: Physiology 115 and 117; Pharmacy 106. Pharmacy 166: laboratory fee, $18.

167–68 *Pharmacology III* (3–3) Leonard

First half: spring—as arranged. *Second half*—not offered 1956–57.

Laboratory work in pharmacological technique. Prerequisite: Pharmacy 106. Prerequisite or concurrent registration: Pharmacy 165. Laboratory fee, $18 a semester.

172 *Advanced Dispensing Pharmacy* (3) Greco

Spring—morning.

The study of special problems in dispensing pharmacy. Prerequisite: Pharmacy 103. Laboratory fee, $18.

174 *Quantitative Pharmaceutical Analysis* (3) Bliven

Spring: lecture (1 hour), laboratory (6 hours)—morning.

Drug analysis. Prerequisite: Chemistry 22. Laboratory fee, $18.

176 *Pharmaceutical Law* (2) Frailey

Spring—morning.

178 *Pharmacy Management* (4) Koustenis

Spring—morning.

Policies and operations relating to the management of a pharmacy.

182 *Advanced Pharmacology I* (2) Leonard

Not offered 1956–57.

Special problems in the field of pharmacology. Prerequisite or concurrent registration: Pharmacy 106.

184 *Special Problems in Pharmacy* (arr.) Greco

Fall—as arranged; spring—as arranged.

Directed laboratory and library research on special problems in pharmacy and pharmaceutical chemistry. For selected undergraduate students. Prerequisite: Pharmacy 102 and 110. Fees to be arranged.

188 *Survey* (1) Bliven and Staff

Spring—morning.

A symposium covering the various phases of pharmacy.

190 *Hospital Pharmacy* (1) Cooper and Staff

Spring—morning.

Organization and functions of hospitals; organization and operation of a hospital pharmacy; professional and sickroom supplies. Prerequisite: Pharmacy 102.

192 *Hospital Pharmacy: Prescription Practice* (1) Cooper

Fall—as arranged; spring—as arranged; summer 1956.

Prescription practice in the University Hospital Pharmacy. Prerequisite: Pharmacy 102.

194 *Manufacturing Pharmacy* (3) Cooper

Lecture (1 hour), laboratory (6 hours). Fall—as arranged; spring—as arranged; summer 1956.

The manufacture of bulk pharmaceuticals in the University Hospital pharmacy. Elective for seniors.

Third Group*

201–2 *Survey of Pharmaceutical Literature* (1–1) The Staff

Assigned library research on the development of pharmaceutical literature.

203–4 *Special Problems in General Pharmacy* (2–2) Greco

Investigations of problems involved in the manufacture of pharmaceutical preparations on a laboratory scale. Laboratory fee, $18 a semester.

206 *Pharmaceutical Technology* (4) Greco, Cooper

Lecture (2 hours); laboratory (6 hours).

A study of advanced manufacturing pharmacy, including formula development for the different types of preparations. Laboratory fee, $18.

215–16 *Advanced Pharmacology II* (3–3) Leonard

Lecture (1 hour); laboratory (6 hours).

Special studies on biological assay methods. Laboratory fee, $18 a semester.

221–22 *Chemistry of Naturally Occurring Organic Medicinal Products* (5–5)

Lecture (3 hours); laboratory (6 hours).

A study of the isolation, chemistry, and relationship between the constitution and physiologic action of alkaloids, fats and sterols, terpenes, carbohydrates, glycosides, and the various biological products. Laboratory fee, $18 a semester.

223–24 *Chemistry of Synthetic Organic Medicinal Products* (5–5)

Lecture (3 hours); laboratory (6 hours).

A study of the chemistry and relationship between the structure and physiologic action of hydrocarbons and their derivatives, nitrogen compounds, oxygen compounds, sulfur compounds, and organo-metallic compounds. Laboratory fee, $18 a semester.

226 *Determination of Physical Constants* (2)

Lecture (1 hour); laboratory (3 hours).

A laboratory and lecture study of the determination of physical constants of medicinal products. Laboratory fee, $18.

228 *Food and Drug Analysis* (4) Bliven

Lecture (2 hours); laboratory (6 hours).

A study of the composition of some common foods and food products. Laboratory fee, $18.

* Courses in this group are not offered in 1956–57.

231 *Pharmacology of Anesthetic Drugs* (4) Leonard

Theoretical consideration of the principles of anesthesiology and laboratory study of the action of anesthetic drugs. Laboratory fee, $18.

234 *Pharmacology of Autonomic Drugs* (4) Leonard

A study of action and interaction of drugs principally influencing the autonomic nervous system. Laboratory fee, $18.

236 *Experimental Toxicology* (4) Leonard

Pharmacological action of toxic drugs correlated with chemical and pathological studies. Laboratory fee, $18.

251–52 *Graduate Seminar* (1–1) The Staff

Current problems and trends in pharmacy. Required of all students registered for the Master's degree.

295–96 *Research and Thesis* (arr.) The Staff

Investigations of special problems in the major field of interest and thesis preparation. Semester hours (not to exceed 6) and fees to be arranged.

PHILOSOPHY

Charles Edward Gauss, Mus.B., Ph.D., *Elton Professor of Philosophy, Executive Officer*

Richard Schlagel, Ph.D., *Assistant Professor of Philosophy*

Bachelor of Arts with a major in Philosophy (Columbian College—Field-of-Study).—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 66.

Required: in addition to the general requirements stated on pages 82–87, the grade of "pass" for the Philosophy major examination at the end of the senior year. The coordinated knowledge upon which the student will be examined is summarized under the following general headings: (1) history of philosophy, (2) logic and theory of knowledge, (3) social philosophy. The Department of Philosophy provides a proseminar (Philosophy 199–200) intended to assist the student in preparing himself for his major examination.

Master of Arts in the field of Philosophy (Columbian College).—Prerequisite: an undergraduate major in Philosophy at this University or the equivalent, as attested by the passing of this University's major examination in Philosophy; the following specific courses or the equivalent: Philosophy 111–12, 113, 121–22, and 131.

Required: the general requirements as stated on pages 89–92. As much as possible of the required twenty-four semester hours in course work should be in third-group courses. Students electing second-group courses are expected to do more intensive work than is demanded of undergraduates. A general written examination on the problems of the field of Philosophy and a departmental oral examination are required.

First Group

51–52 *Introduction to Philosophy* (3–3) The Staff

Academic year—morning and evening; summer 1956.

A critical introduction to the problems of modern philosophy in relation to scientific and social developments since the Renaissance.

Second Group

111–12 *History of Philosophy* (3–3)

Academic year—evening.

History of western philosophy from Thales to Kant.

113 *History of Nineteenth and Twentieth Century Philosophy* (3) Gauss

Fall—evening.

A history of ideas and influences explaining contemporary thought.

121–22 *Logic and Scientific Method* (3–3) Gauss

Academic year—morning.

The study of formal logic and the means of investigation and description employed in the sciences; theory of scientific inference and prediction.

131 *Ethics* (3)

Fall—morning.

An examination of ethical theories, the relation of ethics to social science and psychology.

142 *Philosophies Men Live by* (3)

Summer 1956.

The influence upon contemporary personal and social problems of the great eastern and western philosophies which have served as guides for everyday living and moulded man's cultures and institutions. Gauss

162 *Aesthetics* (3)

Spring—evening.

The problems of appreciation and judgment in the arts, and of theories of the process of artistic creation. Emphasis on contemporary arts and criticism.

171–72 *American Philosophy* (3–3)

First half: not offered 1956–57. *Second half:* spring—morning.

A general history of philosophy in the United States, correlated with the development of European thought. Gauss

180 *Philosophy of History* (3)

Not offered 1956–57.

Problems of historical knowledge and explanation. Critique of philosophies of history. Gauss

193 *Topics in Contemporary Philosophy* (3)

Not offered 1956–57. The Staff

199–200 *Proseminar: Readings for the Major* (3–3)

Academic year—evening.

Conferences and group discussions.

THIRD GROUP

201–2 *Readings and Research* (3–3) The Staff

Academic year—as arranged.

Advanced readings and reports. Investigation of special problems.

211–12 *Seminar in Plato and Aristotle* (3–3) — The Staff
Academic year—evening.

213–14 *Seminar in Seventeenth and Eighteenth Century Philosophy* (3–3) — Gauss
Not offered 1956–57.

216 *Seminar in Kant* (3) — Gauss
Not offered 1956–57.

299–300 *Thesis* (3–3) — The Staff

PHYSICAL EDUCATION FOR MEN*

William Henry Myers, A.M., *Professor of Physical Education for Men*
Joseph Henry Krupa, M.S., Ed.D., *Professor of Physical Education for Men, Executive Officer*
Milo Frederick Christiansen, B.S., M.R., *Professorial Lecturer in Physical Education*
Raymond George Hanken, B.S. in P.E., A.M. in Ed., *Associate Professor of Physical Education for Men*
Vincent James DeAngelis, B.S. in P.E., A.M. in Ed., *Associate Professor of Physical Education for Men*

William Jennings Reinhart, B.B.A., *Associate in Physical Education for Men*
Eugene Hughey Sherman, Sr., B.S., *Associate in Physical Education for Men*

This department includes all the recognized athletic activities of the men students of the University.

Two years of Physical Education (Physical Education 1–2 and 11–12) are required of all men for graduation, except those students exempt under the regulations stated on pages 49–50.

Upon entering the University, all freshmen or other undergraduate students who have not fulfilled the Physical Education requirements are given a medical examination. Assignments for medical examinations will be given at the time of registration. The students who satisfy the requirements of the medical examination are then given a physical efficiency test in the general bodily skills of agility, endurance, and strength; and in swimming. If the physical efficiency test is passed, the student may elect from the following list of activities:

Setting-up Exercises (stretching exercises)
Body Building Exercises (gymnastic apparatus and weight training skills)
Competitive games and sports
Swimming (beginner, intermediate, advanced, life saving)

If the physical efficiency test is not passed, the student will be assigned to a class for training in the above activities in the order listed.

The Department furnishes gymnasium uniforms and personal equipment upon receipt of a small payment.

Bachelor of Science in Physical Education (School of Education).—Prerequisite: the Physical Education for Men curriculum in the Junior College, see page 69. The requirements for the degree are stated on pages 173–74.

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* The University is not responsible for injuries received in intercollegiate or intramural games, or in any of the activities of the departments of Physical Education, and the student assumes full responsibility therefor.

First Group

1–2 *Freshman Physical Education* (1–1) — The Staff

Academic year—as arranged.

Two periods of supervised activity a week. Locker and towel fee,† $4.50 a semester.

11–12 *Sophomore Physical Education* (1–1) — The Staff

Academic year—as arranged.

Two periods of supervised activity a week. Locker and towel fee,* $4.50 a semester.

43–44 *Techniques of Physical Education Motor Activities* (2–2) — DeAngelis, Krupa

Academic year—morning.

Fundamental skills, rules, and organization. Locker and towel fee,* $4.50 a semester.

45–46 *Methods and Materials for Teaching Individual and Dual Sports in Secondary Schools* (2–2) — The Staff

Academic year—afternoon.

Tennis, golf, swimming, wrestling, badminton, bowling. Locker and towel fee,* $4.50 a semester.

47 *Introduction to Physical Education* (2) — Myers

Fall—morning.

An orientation course presenting the problems of physical education. vocational analysis, scientific foundations, and scope of field.

48 *Introduction to Recreation* (2) — Hanken

Spring—as arranged.

The role of recreation in modern living; current practices in community recreation work; standards of training, experience, and salary; types of leadership.

49 *Human Anatomy* (3) — Stallings

Fall—morning.

The structure of the human body. Basic course for physical education majors. Also open to both men and women not majoring in Physical Education. Prerequisite: Biology 1–2 or Zoology 1–2.

* The locker and towel fee is required for registration in one or more of the activity courses.

50 *Kinesiology* (3) Lawrence

Spring—morning.

A study of the anatomical mechanism of movement, analysis of the action of muscles in physical education activities. Prerequisite: an approved course in anatomy.

58 *First Aid and Care of Athletic Injuries* (2) DeAngelis, Lawrence

Spring—afternoon.

Prevention and emergency care of injuries of all types, with special reference to first aid, civil defense, bandaging, and massage. A practical course. Prerequisite: Biology 1–2 or Zoology 1–2.

SECOND GROUP

101 *Physical Education in the Elementary School* (3) Atwell, Burtner

Fall—afternoon and evening.

Physical growth and development of the child and adolescent. Survey of age characteristics and organization of physical education activities for the various age levels in elementary school, playground, and settlement house programs. Methods and materials of tumbling, games, dance, and self-testing activities.

103 *History and Principles of Physical Education* (3) Atwell, Krupa

Fall—morning.

Survey of history as it relates to contemporary physical education. Study of aims, objectives, and philosophy of physical education.

105–6 *Corrective Physical Education and Physical Examinations* (3–3) Lawrence

Academic year—morning.

Cause and correction of faulty body mechanics, physical examination methods for the diagnosis of postural defects, prescription of exercises, and program adaptation. Prerequisite: Physical Education 49 and 50.

107 *Techniques for Teaching Recreational Dance* (1) Masterson

Fall—afternoon.

Methods and materials for teaching the country and social dances of America and the folk dances of other countries to secondary-school age and adult groups. Square-dance calling is included. Locker and towel fee,* $4.50.

* The locker and towel fee is required for registration in one or more of the activity courses.

109–10 *Leadership Organization in the Intramural Program* (2–2) — DeAngelis

Academic year—afternoon.

Principles of administration, organization, and supervision of intramural activities in the physical education program of the junior high school, senior high school, and college.

113–14 *Methods and Practice in Teaching Physical Education Activities* (2 to 4–2 to 4) — Hankin and Staff

Academic year—afternoon.

Principles and methods applied to learning and teaching physical education activities. Supervised laboratory. Locker and towel fee,* $4.50 a semester.

115–16 *Method and Materials for Teaching Team Sports in Secondary Schools* (2 to 4–2 to 4) — DeAngelis, Hanken

Academic year—morning.

Football, basketball, baseball, track and field. Locker and towel fee,* $4.50 a semester.

117 *Methods of Teaching Modern Dance* (1 to 2) — Burtner

1956–57 and alternate years: fall—as arranged.

Techniques for the teaching of movement as a medium of expression. Practical work in body technique, composition, and the analysis of accompaniment for dance including instrumental, voice, and percussion. Application is made to both secondary school and adult age levels. Locker and towel fee,* $4.50.

118 *Dance Production* (1 to 2) — Burtner

1956–57 and alternate years: spring—as arranged.

Choreography for dance concerts, musicals, and plays. The planning and staging of dance for TV, dance demonstrations, and folk festivals. Lighting, costuming, sets, make-up for dance performances. Locker and towel fee,* $4.50.

121 *School and Community Health Programs* (3) — The Staff

Fall—morning.

Health services, healthful environment, health instruction, sources of material for general health knowledge. Prerequisite: Biology 1–2 or Zoology 1–2.

* The locker and towel fee is required for registration in one or more of the activity courses.

122 *Methods and Materials for Health Education* (3) Atwell

Spring—evening.

Organization and presentation of health materials for each age level. Prerequisite: Biology 1–2 or Zoology 1–2.

131 *Tests and Measurements in Physical Education* (3) Krupa

Fall—morning.

Critical survey of tests in physical activities, methods of test construction, elementary statistics.

132 *Camp Leadership* (1) Atwell, Stallings

Spring—afternoon.

Survey course in camp counseling.

133–34 *Observation and Student Teaching* (3–3 to 6) Atwell, Myers

First half: fall and spring—as arranged. *Second half:* fall and spring—as arranged.

Assignments are made to schools in Washington and the vicinity. Physical Education 134, student teaching fee, $50.

136 *Survey of Dance History and Dance Forms* (3) Burtner

Not offered 1956–57.

The development of dance from primitive ritual to present day recreational and art forms of the dance. Includes ethnologic dance, practice and discussion of fundamental movement techniques and composition.

138 *Organization and Administration of Physical Education* (3) Atwell, Myers

Spring—morning.

Organization and administration of physical education programs in elementary and secondary schools and in colleges. Study of plants, fields, equipment, and programs.

151–52 *Recreational Leadership Activities* (1 to 3–1 to 3) Christiansen

1957–58 and alternate years.

Fall semester: basic skills for the pre-school and school-age child. Laboratory practice in crafts, music, dramatics, physical and social activities. Spring semester: basic skills for the teen-age and adult. Arts and crafts, dramatics, physical and social activities.

161 *Community Organization for Recreation* (3) Christiansen

1956–57 and alternate years: fall—evening.

Resources, principles, and methods in organizing community recreation services.

162 *Administration of Community Recreation Program* (3) Christiansen

1956–57 and alternate years: spring—evening.

Factors and problems in administering recreation including surveys, legislation, program, area, facilities, leadership, finance, and public relations.

PHYSICAL EDUCATION FOR WOMEN*

Ruth Harriet Atwell, A.M., *Professor of Physical Education for Women, Executive Officer*

Helen Bennett Lawrence, A.M., *Professor of Physical Education for Women*

Elizabeth Burtner, A.M., *Professor of Physical Education for Women*

Loretta May Stallings, A.M., *Assistant Professor of Physical Education for Women*

Joan Higginson Masterson, B.S. in P.E., *Instructor in Physical Education for Women*

Camille Jacob Craig, A.M., *Instructor in Physical Education for Women*

Helen Taylor Harris, A.M., *Associate in Physical Education for Women*

Two years of Physical Education (Physical Education 1–2 and 11–12) are required of all women for graduation, except students exempt under regulations stated on pages 49–50. In the fall a complete medical and physical examination is given each student for the purpose of discovering individual needs. Those students whose examinations indicate the desirability of remedial or restricted activity are assigned to a program especially adapted to their needs. This limited program includes moderate sports and individual exercises in small groups under careful supervision.

The required costume for Physical Education classes may be purchased at the University Book Store.

Bachelor of Science in Physical Education (School of Education).—Prerequisite: the Physical Education for Women curriculum in the Junior College, see pages 69–70. The requirements for the degree are stated on pages 174–75.

Within the curriculum leading to the degree of Bachelor of Science in Physical Education there is opportunity for specialization in dance, sports, correctives or recreation.

First Group

1–2 *Freshman Physical Education* (1–1) — The Staff

Academic year: fundamentals of health and physical education—morning and afternoon; activity—morning and afternoon.

One period of fundamentals of health and physical education and two periods a week chosen from the activities offered each season.

Fundamentals of health and physical education: one semester on study of the factors involved in the general maintenance of health, efficient use of the body, and fundamentals of movement; one semester on fundamentals of dance.

Activities: badminton, basketball, body mechanics, canoeing, field hockey, folk and square dance, golf, modern dance, riding, skating, swimming, synchronized swimming, tennis. Locker and towel fee,† $4.50 a semester.

* The University is not responsible for injuries received in intercollegiate or intramural games, or in any of the activities of the departments of Physical Education, and the student assumes full responsibility therefor.

† The locker and towel fee is required for registration in one or more of the activity courses.

11–12 *Sophomore Physical Education* (1–1) — The Staff

Academic year: two periods a week—morning and afternoon.

Two periods a week chosen from the activities offered each season as listed under Physical Education 1–2. Locker and towel fee,* $4.50 a semester.

43–44 *Techniques of Physical Education Motor Activities* (2–2) — The Staff

Academic year—as arranged.

Fundamental skills, rules, and organization. Locker and towel fee,* $4.50 a semester.

47 *Introduction to Physical Education* (2) — Myers

Fall—morning.

An orientation course presenting the problems of physical education, vocational analysis, scientific foundations, and scope of field.

48 *Introduction to Recreation* (2) — Hanken

Spring—as arranged.

The role of recreation in modern living; current practices in community recreation work; standards of training, experience, and salary; types of leadership.

49 *Human Anatomy* (3) — Stallings

Fall—morning.

The structure of the human body. Basic course for physical education majors. Also open to both men and women not majoring in Physical Education. Prerequisite: Biology 1–2 or Zoology 1–2.

50 *Kinesiology* (3) — Lawrence

Spring—morning.

A study of the anatomical mechanism of movement, analysis of the action of muscles in physical education activities. Prerequisite: an approved course in anatomy.

51–52 *Methods and Materials for Teaching Physical Education Activities in Secondary Schools and Colleges* (2–2) — The Staff

Not offered 1956–57.

Team sports: basketball, hockey, softball, soccer, speedball, volleyball. Individual and dual sports: badminton, tennis, golf, archery, canoeing, swimming and diving, life-saving and water safety, synchronized swimming. Group gymnastics. Tumbling. Locker and towel fee,* $4.50 a semester.

* The locker and towel fee is required for registration in one or more of the activity courses.

58 *First Aid and Care of Athletic Injuries* (2) — DeAngelis, Lawrence

Spring—afternoon.

Prevention and emergency care of injuries of all types, with special reference to first aid, civil defense, bandaging, and massage. A practical course. Prerequisite: Biology 1–2 or Zoology 1–2.

SECOND GROUP

101 *Physical Education in the Elementary School* (3) — Atwell, Burtner

Fall—afternoon and evening.

Physical growth and development of the child and adolescent. Survey of age characteristics and organization of physical education activities for the various age levels in elementary school, playground and settlement house programs. Methods and materials of tumbling, games, dance, and self-testing activities.

103 *History and Principles of Physical Education* (3) — Atwell, Krupa

Fall—morning.

Survey of history as it relates to contemporary physical education. Study of aims, objectives, and philosophy of physical education.

105–6 *Corrective Physical Education and Physical Examinations* (3–3) — Lawrence

Academic year—morning.

Cause and correction of faulty body mechanics, physical examination methods for the diagnosis of postural defects, prescription of exercises, and program adaptation. Prerequisite: Physical Education 49 and 50.

107 *Techniques for Teaching Recreational Dance* (1) — Masterson

Fall—afternoon.

Methods and materials for teaching the country and social dances of America and the folk dances of other countries to secondary school age and adult groups. Square-dance calling is included. Locker and towel fee,* $4.50.

109–10 *Leadership Organization in the Intramural Program* (2–2) — DeAngelis

Academic year—afternoon.

Principles of administration, organization, and supervision of intramural activities in the physical education program of the junior high school, senior high school, and college.

* The locker and towel fee is required for registration in one or more of the activity courses

111–12 *Methods and Materials for Teaching Physical Education Activities in Secondary Schools and Colleges* (1 to 2–1 to 2) The Staff

1956–57 and alternate years: academic year—afternoon.

Continuation of methods and materials in activities listed under Physical Education 51–52. Locker and towel fee.* $4.50 a semester.

113–14 *Methods and Practice in Teaching Physical Education Activities* (2 to 4–2 to 4) The Staff

Academic year—as arranged.

Principles and methods applied to learning and teaching physical education activities. Supervised laboratory. Locker and towel fee,* $4.50 a semester.

117 *Methods of Teaching Modern Dance* (1 to 2) Burtner

1956–57 and alternate years: fall—as arranged.

Techniques for the teaching of movement as a medium of expression. Practical work in body technique, composition, and the analysis of accompaniment for dance including instrumental, voice, and percussion. Application is made to both secondary school and adult age levels. Locker and towel fee,* $4.50.

118 *Dance Production* (1 to 2) Burtner

1956–57 and alternate years: spring—as arranged.

Choreography for dance, concerts, musicals, and plays. The planning and staging of dance for TV, dance demonstrations, and folk festivals. Lighting, costuming, sets, make-up for dance performances. Locker and towel fee,* $4.50.

121 *School and Community Health Programs* (3) The Staff

Fall—morning

Health services, healthful environment, health instruction, sources of material for general health knowledge. Prerequisite: Biology 1–2 or Zoology 1–2.

122 *Methods and Materials for Health Education* (3) Atwell

Spring—evening.

Organization and presentation of health materials for each age level. Prerequisite: Biology 1–2 or Zoology 1–2.

131 *Tests and Measurements in Physical Education* (3) Krupa

Fall—morning.

Critical survey of tests in physical activities, methods of test construction, elementary statistics.

* The locker and towel fee is required for registration in one or more of the activity courses.

132 *Camp Leadership* (1) — Atwell, Stallings

Spring—afternoon.

Survey course in camp counseling.

133–34 *Observation and Student Teaching* (3–3 to 6) — Atwell, Myers

Academic year—as arranged.

Assignments are made to schools in Washington and the vicinity. Physical Education 134, student-teaching fee, $50.

136 *Survey of Dance History and Dance Forms* (3) — Burtner

Not offered 1956–57.

The development of dance from primitive ritual to present day recreational and art forms of the dance. Includes ethnologic dance, practice and discussion of fundamental movement techniques and composition.

138 *Organization and Administration of Physical Education* (3) — Atwell, Myers

Spring—morning.

Organization and administration of physical education programs in elementary and secondary schools and in colleges. Study of [illegible] fields, equipment, and programs.

151–52 *Recreational Leadership Activities* (1 to 3–1 to 3) — Christiansen

1957–58 and alternate years.

Fall semester: basic skills for the pre-school and school-age child. Laboratory practice in crafts, music, dramatics, physical and social activities. Spring semester: basic skills for the teen-age and adult. Arts and crafts, dramatics, physical and social activities.

161 *Community Organization for Recreation* (3) — Christiansen

1956–57 and alternate years: fall—evening.

Resources, principles, and methods in organizing community recreation services.

162 *Administration of Community Recreation Programs* (3) — Christiansen

1956–57 and alternate years: spring—evening.

Factors and problems in administering recreation including surveys, legislation, program, area, facilities, leadership, finance, and public relations.

PHYSICAL MEDICINE AND REHABILITATION

Charles Samuel Wise, B.S., M.D., *Professor of Physical Medicine and Rehabilitation, Executive Officer*

Francis Liell Wenger, B.S., M.D., *Assistant Clinical Professor of Physical Medicine and Rehabilitation*

Alvin Knudson, B.S., M.D., *Associate in Physical Medicine and Rehabilitation*

Charles Jerome Everding, B.S., M.D., *Clinical Instructor in Physical Medicine and Rehabilitation*

150 *Elements of Physical Medicine* — The Staff

Spring—as arranged.

In arrangement with the Anatomy Department, lectures and demonstrations of the various tests and measurements are employed in the evaluation of physical disability.

351–52 *Advanced Physical Medicine* — The Staff

Academic year—as arranged.

Lectures and demonstrations concerning the various techniques, clinical applications of physical medicine and rehabilitation to be integrated with the teaching of the associated medical and surgical specialties.

467–68 *Clinical Studies* — The Staff

Academic year—as arranged.

Clinical teaching and demonstration at the University Hospital.

485 *Research* (arr.) — The Staff

Fall—as arranged.

Open to medical students and qualified nonmedical students.

PHYSICS

Thomas Benjamin Brown, Ph.D., *Professor of Physics, Executive Officer*
George Gamow, Physics D., *Professor of Theoretical Physics*
George Martin Koehl, A.M., *Professor of Physics*
Lewis Slack, Ph.D., *Associate Professor of Physics*
Edward Felix Turner, Jr., Ph.D., *Assistant Professor of Physics*
————————, *Assistant Professor of Physics*
Albert Prentice Kenyon, A.M., *Lecturer in Physics*
John Newell Tevis, A.M., *Lecturer in Physics*
DeWitt Fisher, A.M., *Lecturer in Physics*
Andre-Guy Lacerte, M.S., *Instructor in Physics*
John Lyle Prather, A.B., *Instructor in Physics*

Bachelor of Arts or *Bachelor of Science with a major in Physics (Columbian College—Departmental).*—Prerequisite: the Arts and Letters or the Science curriculum, respectively, in the Junior College, see pages 66–67. The following courses must be included: Physics 6, 7, 8, and 55; Chemistry 21; Mathematics 19 and 20.

Required, for both the Bachelor of Arts degree and the Bachelor of Science degree: the general requirements as stated on pages 82–87, including Mathematics 132 and Physics 101, 105, 106, 113, 132, and 155 or 156, plus *one* of the following Physics 102, 114, 118, 123, and 128.

Master of Science in the field of Physics (Columbian College).—Prerequisite: a Bachelor's degree with a major in Physics at this University, or the equivalent.

Required: the general requirements as stated on pages 89–92. The thirty hours of required work must include Mathematics 171 (if not taken earlier) and Physics 211–12, 255 or 256, and 291–92.

Doctor of Philosophy (Graduate Council).—See page 98.

Bachelor of Science in Engineering with an option in Physics (School of Engineering).—For requirements, see pages 138–41, 143, 145–46.

Bachelor of Arts in Education with a teaching field in Physics (School of Education).—Prerequisite: the Education curriculum, page 68.

Required, the Physics option, page 170; and the professional courses listed on page 172.

First Group

5 *General Physics* (3) Koehl and Staff

Lecture (1 hour), recitation (1 hour), laboratory (2½ hours). Fall—morning, afternoon, and evening. Spring: lecture—morning and evening; recitation—morning, afternoon, and evening; laboratory—morning, afternoon, and evening. Summer 1956.

An introduction to the phenomena of light, heat, force, energy, and the properties of matter. This course may be taken as a terminal course by non-science students who wish an introduction to the physical sciences. Prerequisite high school algebra and plane geometry. Material fee, $11.

6 *General Physics* (3) Slack and Staff

Spring: lecture (1 hour), recitation (1 hour), laboratory (2½ hours)—morning, afternoon, and evening.

Mechanics, wave-motion, and sound. Prerequisite: Physics 5* high school algebra and plane geometry. Material fee, $11.

7 *General Physics* (3) Turner and Staff

Fall: lecture (1 hour), recitation (1 hour), laboratory (2½ hours)—morning, afternoon, and evening; summer 1956.

Elementary electricity and magnetism. Prerequisite: Physics 5*; high school algebra and plane geometry. Material fee, $11.

8 *General Physics* (3) Brown and Staff

Spring—morning and evening; summer 1956.

This course is the fourth in the sequence of courses 5, 6, 7, and 8, and emphasizes the connection between the fundamental principles studied in courses 5, 6, and 7, and the phenomena and theories of modern physics. Topics considered include electromagnetic waves (light, radio, and X-rays), atomic and molecular structure, radioactivity, nuclear physics, the quantum theory of matter and radiation, and the elementary particles such as electrons, protons, neutrons, and mesons. Prerequisite: Physics 6 and 7.

55 *Physical Measurements* (3) Slack and Staff

Fall: lecture (2 hours), laboratory (3 hours)—afternoon and evening.

Theory and methods of precise measurement in the several fields of physics. Prerequisite: Physics 6 and 7; Mathematics 19. Material fee, $11.

Second Group

101 *Mechanics* (3) Koehl

1956–57 and alternate years: fall—morning; 1957–58 and alternate years: fall—evening.

Statics, elasticity, dynamics of solids and fluids, and gravitation. Prerequisite: Physics 6; Mathematics 20.

102 *Heat and Thermodynamics* (3)

1957–58 and alternate years.

Fundamental concepts, heat transfer, the laws of thermodynamics with applications to physical systems. Prerequisites: Physics 8; Mathematics 20.

* This prerequisite may be waived for students who have credit for a high school Physics course which included *individual* laboratory work, providing they pass the qualifying examination given at the dates specified in the University calendar.

105 *Principles of Electricity* (3)

1956–57 and alternate years: fall—evening; 1957–58 and alternate years: fall—morning.

Elementary d.c. and a.c. circuit theory, electric and magnetic fields, dielectric and magnetic materials, motion of charged particles in electric and magnetic fields. Prerequisite: Physics 8; Mathematics 20.

106 *Optics* (3) Koch

1956–57 and alternate years: spring—evening; 1957–58 and alternate years: spring—morning.

Geometrical optics; elementary theory of wave motions; interference, diffraction, polarization, and dispersion of light; laws of black-body radiation. Prerequisite: Physics 8; Mathematics 20.

110 *Philosophical Foundations of Modern Physics* (3) Gamow

Spring—evening.

A non-mathematical treatment. Einstein's ideas of space, time, and motion; the expanding universe; quantum theories concerning the structure of matter; protons, neutrons, mesons, and other elementary particles; the principle of uncertainty; statistical methods of physics; application of physics to the problems of living matter. Prerequisite: high school algebra and one year of college science. Not open to majors in physics, chemistry, or engineering.

111 *Introduction to Modern Physical Theory* (3) Gamow

Spring—evening.

The basic principles of relativity (special and general) and quantum theory, with applications to cosmology and to the structure of matter. Prerequisite: Physics 8; Mathematics 20; or the equivalent.

113 *Atomic Physics* (3) Prather

1956–57 and alternate years: fall—morning; 1957–58 and alternate years: fall—evening.

Properties of elementary particles, interactions with radiation, atomic structure, optical and X-ray spectra, introduction to wave mechanics. Prerequisite: Physics 8; Mathematics 20.

114 *Statistical Physics* (3) Turner

Spring—evening.

Classical and quantum statistics with emphasis on Maxwell-Boltzmann statistics, applications to kinetic theory of gases, gaseous diffusion specific heats of gases and solids. Prerequisite: Physics 8; Mathematics 20.

118 *Introduction to Solid State Physics* (3) Turner

1957–58 and alternate years.

Thermal, dielectric, and magnetic properties of solids; superconductivity; electron theory of metals and semiconductors. Prerequisite: Physics 113; Mathematics 20.

123 *Nuclear Physics* (3) Slack

Spring—evening.

Structure and stability of atomic nuclei, nuclear transformations and reactions, radiation of nuclei, fission. Prerequisite: Physics 113.

128 *Sound* (3)

1956–57 and alternate years: spring—evening.

Production, propagation, and detection of sound waves; vibrations of sounding bodies; acoustic instruments and acoustic measurements. Prerequisite: Physics 8; Mathematics 20.

132 *Electronics* (3) Brown, Turner, and Staff

Spring: lecture (2 hours), laboratory (2½ hours)—morning and evening.

The phenomena of electron emission from solids, the physical properties of electron tubes, and the principles underlying their basic applications. Prerequisite: Physics 8 and 55, and Physics 105 or Electrical Engineering 10. Material fee, $11.

133 *Electronic Circuits* (3) Brown

1956–57 and alternate years: fall—evening; 1957–58 and alternate years: fall—morning.

A continuation of Physics 132. Includes non-linear operation of electron tubes, the basic radio-frequency applications of electron tubes, and special types of tubes such as klystrons and magnetrons. Lectures and problems. Prerequisite: Physics 132; Electrical Engineering 107.

141 *Electromagnetic Waves* (3) Brown

1957–58 and alternate years.

Electromagnetic theory for light and radio waves, including an introduction to guided waves and cavity resonators. Prerequisite: Physics 105 and Mathematics 132, or the equivalent.

155–56 *Advanced Physical Measurements* (3–3) Turner

Academic year—Saturday.

Optional programs of experiments in electricity and magnetism, optics, or atomic physics. Corresponding prerequisites are Physics 105, 106, or 113. In addition, Physics 55 is a general prerequisite. Material fee, $11 a semester.

191 *Nuclear Reactors* (3)

1956–57 and alternate years: fall—evening.

Neutron physics: sources of neutrons, neutron reactions, slowing down and diffusion; introduction to transport theory; fission process; reactor types; basic theory of homogeneous and heterogeneous reactors, including specific numerical studies from recent publications. Prerequisite: Physics 8; Mathematics 20.

THIRD GROUP

211 *Classical Physical Theory* (3) Slack

Fall—evening.

Dynamics of systems of particles and of rigid bodies, generalized coordinates. Prerequisite: Physics 101; Mathematics 132, 171. (Mathematics 171 may be taken concurrently.)

212 *Classical Physical Theory* (3) Slack

Spring—evening.

Classical non-relativistic field theory with applications to electromagnetic and hydrodynamic fields. Prerequisite: Physics 101 and 105; Mathematics 132, 171.

221 *Wave Mechanics* (3) Gamow

1956–57 and alternate years: fall—evening.

Criticism of classical ideas of mechanics and a formulation of wave-mechanical equations; matrix mechanics and its relation to wave mechanics; applications to various problems of atomic, molecular, and nuclear physics. Prerequisite: Physics 113 and 211–12.

222 *Quantum Electrodynamics and Field Theories* (3) Gamow

1956–57 and alternate years: spring—evening.

Relativistic wave equations, quantization of electromagnetic fields, interaction between matter and radiation, elementary particles and their transformations. Prerequisite: Physics 221.

227 *Statistical Thermodynamics* (3) Gamow

1957–58 and alternate years.

Axiomatic formulation of thermodynamics. Thermodynamic potentials and equilibria. The method of Gibbs. Statistical theory based on indistinguishability of particles. Bose-Einstein and Fermi-Dirac statistics. Applications to radiation, electron, gas, etc. Prerequisite: Physics 102, 114; Mathematics 132.

228 *Relativity and Cosmology* (3) Gamow

1957–58 and alternate years.

Lorentz transform and four-dimensional formulation. Tensor algebra and the theory of curved spaces. Einstein's theory of gravitation. Relativistic cosmology. Theory of the expanding universe. Modern cosmogonical theories. Relativistic thermodynamics. Prerequisite: Physics 211, 212.

236 *Electrical Conduction in Gases* (3) Brown

Not offered 1956–57.

Fundamental theory and principal applications. Ionization currents, Townsend currents, and plasma currents; ion sheaths and probe measurements; glow discharges, arcs, sparks; ionization chambers, counter tubes, glow lamps, thyratrons, and ignitrons. Prerequisite: Physics 132.

242 *Physical Theory of Crystals* (3) Turner

Spring—evening.

Crystal structure and crystal growth, elasticity, dislocations and plastic flow, crystal imperfections, lattice energy of ionic crystals.

255–56 *Graduate Laboratory* (4–4) Brown

Academic year—Saturday.

Special topics. One semester of this course is required of all Master's candidates in physics. Not open to undergraduates. Material fee, $11 a semester.

291–92 *Seminar: Recent Developments in Physics* (1–1) The Staff

Academic year: alternate weeks—Monday evening.

Individual investigations of special problems. All students registered for a Master's degree in physics are expected to attend this seminar during residence for the degree, and to take part in its programs. Credit for participation in the seminar work is obtained by registering for this course during the last two semesters of residence; this credit, however, is based upon the seminar work during the entire period of residence.

299–300 *Thesis* (3–3) The Staff

Academic year—as arranged.

Fees to be arranged.

PHYSIOLOGY

Chester Elwood Leese, Ph.D., *Fry Professor of Physiology, Executive Officer*
William Rankin Duryee, Ph.D., *Research Professor of Physiology*
Joseph William Still, M.D., M.P.H., *Assistant Professor of Physiology*
Habeeb Bacchus, Ph.D., M.D., *Assistant Research Professor of Physiology*
Melvin Harold Heiffer, Ph.D., *Assistant Research Professor of Physiology*
Hyman Erwin Steinman, M.D., *Lecturer in Physiology*
Charles Arthur Toompas, A.M., *Instructor in Physiology*
Tal Gordon Hiebert, A.M., *Instructor in Physiology*
Louis Pat Munan, M.S., *Associate in Physiology*
William Spector, A.M., *Associate in Physiology*
Francis DeSales Woidich, B.S., M.D., *Associate (Research) in Physiology*

Master of Arts or *Master of Science in the field of Physiology (Columbian College).*—Prerequisite: the degree of Bachelor of Arts or Bachelor of Science, respectively, with a major in Biology, Chemistry, Physics, or Zoology from this University, or the equivalent. The undergraduate work should include the equivalent of Biology 1–2 or Zoology 1–2, and Zoology 41–42; Chemistry 11–12, 21, 151–52; Physics 5, 6, and 7. It is recommended that Biochemistry 221–22 be taken as an elective. A Bachelor's degree which includes the premedical requirements is acceptable for admission to candidacy.

Required: the general requirements as stated on pages 89–92. In addition to the thesis, the thirty hours of required work should include Physiology 201, 221 or 222, 231, 234, 236, 238, 240, and at least three credit hours of research (Physiology 295 or 296). Biochemistry 221–22 is required unless it was included in the undergraduate program.

Doctor of Philosophy (Graduate Council).—See page 98.

Leese

115 *Physiology* (3)

Fall: section A—Tues. and Thurs., 8:45 to 10:00 A.M.; section B—Tues. and Thurs., 6:10 to 7:25 P.M.

Lectures for nonmedical students covering the fundamentals of physiology in its various subdivisions. Prerequisite: one year of general science or one semester of a biological science.

The Staff

117 *Experimental Physiology* (1)

Fall—Sat., 9:10 to 12:00 A.M.

Laboratory exercises in the fundamentals of physiology, for nonmedical students. Prerequisite or concurrent registration: Physiology 115 or the equivalent. Material fee, $18.

120 *Physiology of Endoctrine Activity* (2) Munan

Spring—Tues. and Thurs., 6:10 P.M.

For nonmedical students. The circulatory, metabolic, reproductive, growth, and other adaptations, immediate and long term, accompanying and affecting endocrine activity. Prerequisite: Physiology 115 or the equivalent.

130 *The Psycho-physiology of Personality* (2) Leese

Spring—Tues. and Thurs., 5:10 P.M.

For nonmedical students. Lectures on the genesis and expression of personality, with emphasis on the physiological approach. Prerequisite: Physiology 115 or the equivalent and general psychology.

149–50 *Advanced Physiology* The Staff

Fall—4 hours a week; spring—14 hours a week.

Lectures and laboratory work in all divisions of Physiology. This course is designed for medical students.

201–2 *Experimental Method* (1–1)

First half: fall and spring—Sat., 9:00 A.M. *Second half:* spring—Sat., 9:00 A.M.

For nonmedical graduate students. Design of controlled experiments in medical or biological investigation; errors in design; criticism and judgment of evidence; and tests of the statistical significance of experimental results.

211–12 *Problems in Physiology* (arr.) The Staff

Academic year—as arranged.

For nonmedical graduate students. Open to undergraduate students with the approval of the Department. Prerequisite: Physiology 115 and 117, or the equivalent.

221–22 *Physiology Seminar* (1–1) The Staff

Academic year—1 hour a week, as arranged.

For nonmedical students undertaking graduate work in physiology. Prerequisite: Physiology 115 and 117, or the equivalent.

231 *Advanced Physiology of Circulation and Respiration* (4) Leese and Staff

Fall—4 hours a week, as arranged.

For nonmedical graduate students. Lectures on blood, heart, circulation, tissue water, respiration, and acid-base balance.

234 *Advanced Physiology of Nutrition, Metabolism, and Excretion* (2) Leese, Still, Steinman

Spring—2 hours a week, as arranged.

For nonmedical graduate students. Lectures on nutrition, digestion, metabolism, excretion, and temperature regulation.

236 *Advanced Physiology of the Endocrine Glands and Reproduction* (1) Bacchus and Staff

Spring—1 hour a week, as arranged.

For nonmedical graduate students. Lectures on ductless glands, hormones, humoral agents, and reproduction.

238 *Advanced Physiology of the Neuro-muscular System* (2) Leese

Spring—2 hours a week, as arranged.

For nonmedical graduate students. Lectures on sensory reception, central nervous processes, somatic and visceral motor activity, and the behavior of smooth and striped muscle.

240 *Advanced Experimental Physiology* (3) The Staff

Spring—9 hours a week, as arranged.

For nonmedical graduate students. Laboratory work only. Correlated with the lectures in courses 231–238. Material fee, $42.

241 *Advanced Physiology of the Cell* (1) Duryee

Fall—1 hour a week, as arranged.

For nonmedical graduate students. Special emphasis on biophysics and the biochemistry of the cell in relation to organ function.

295–96 *Research* (arr.) Leese and Staff

Academic year—as arranged.

299–300 *Thesis* (3–3) Leese

POLITICAL SCIENCE

Warren Reed West, Ph.D., *Professor of Political Science*
John Withrow Brewer, Ph.D., *Professor of International Law, Executive Officer*
Wolfgang Herbert Kraus, Dr. Jur., S.J.D., *Professor of Political Science*
Fred Latimer Hadsel, Ph.D., *Professorial Lecturer in Political Science*
Howard Rowland Ludden, A.M., *Assistant Professor of Political Science*
Hugh Linus LeBlanc, A.M., *Assistant Professor of Political Science*
Floyd Millard Riddick, Ph.D., *Lecturer in Political Science*
Robert Amendt Kinney, A.B., *Lecturer in Political Science*

Bachelor of Arts with a major in Political Science (Columbian College—Departmental).—Prerequisite: the Arts and Letters curriculum in the Junior College stated on page 66, including Political Science 9–10.

Required: in addition to the general requirements stated on pages 82–87, thirty semester hours from the following groups distributed as follows: twelve hours from Group A; six hours from Group B; 12 hours from Group A, B, or C.

Group A: Political Science 111, 112, 117–18, 121–22. Group B: Political Science 171, 172, 181–82. Group C: Political Science 104, 107, 113, 120, 125, 130, 141, 145, 146, 151–52, 161–62, 177, 178, 191, 194.

Undergraduate students interested in preparing for graduate work in Public Administration will consult the Executive Officer of the Department of Political Science for modifications of the above requirements.

Bachelor of Arts with a major in Latin American Civilization (Columbian College—Field-of-Study).—See the Department of History, page 313.

Master of Arts in the field of Political Science (Columbian College).—Prerequisite: a Bachelor of Arts degree with a major in Political Science at this University, or the equivalent.

Required: the general requirements as stated on pages 89–92. The thirty hours of required work must be approved in advance by the Adviser.

Master of Arts in the field of Latin American Civilization (Columbian College).—See the Department of History, page 314.

Doctor of Philosophy (Graduate Council).—See page 98.

Bachelor of Arts and *Master of Arts in Government in the field of Foreign Affairs (School of Government).*—See pages 187–89, 192–94.

First Group

1 *Introduction to Government** (3) Ludden

Fall—morning; spring—morning.

Basic principles and problems of political life: theories, forms, and processes of government in the United States and foreign countries. Attention is also given to international relations.

* Six hours of first-group Political Science courses are prerequisite to all second-group courses.

9–10 *Government of the United States** (3–3) The Staff

First half: fall—morning and evening; spring—morning; summer 1956. *Second half:* fall—morning; spring—morning and evening; summer 1956.

First half: structure, powers, and operation of the Federal Government: Congress, the President, and the Supreme Court; elections, political parties, and pressure groups. *Second half:* state and local governments; civil rights; major functions of government at federal, state, and local levels.

Second Group

104 *State and Local Government* (3–3) LeBlanc

1957–58 and alternate years.

State, municipal, and other local governmental forms, operations, and problems, with attention to policy formulation and administration and to the forces of practical politics. Not open to students who have credit for former Political Science 115.

107 *Problems in Modern Political Thought* (3) Kraus

Summer 1956.

Development of democratic political institutions and analysis of the main challenges to constitutional democracy in the 19th and 20th centuries.

111 *Introduction to Comparative Government* (3) Kraus

Fall—morning; summer 1956.

Government and politics of the principal constitutional democracies of Western Europe, with special attention to Great Britain and France.

112 *Introduction to Comparative Government* (3) Kraus

Spring—morning.

Government and politics of the principal political systems of Central and Eastern Europe: Germany and the Soviet Union.

113 *Political Problems of the British Commonwealth of Nations* (3) Kraus

Not offered 1956–57

Transformation of the Colonial Empire into the modern Commonwealth: questions of equal partnership, and governments and politics in the principal dominions.

* Six hours of first-group Political Science courses are prerequisite to all second-group courses.

117–18 *Political Theory: the Growth of Political Thought in the West* (3–3) Kraus

Academic year—evening.

First half: from Classical Antiquity to the Middle Ages. *Second half:* from the Renaissance and Reformation to recent times.

120 *Foundations of American Democracy* (3) Brewer

1956–57 and alternate years: spring—morning.

Introduction to political thought in the United States, from colonial times to the end of the Civil War period.

121–22 *The Constitution of the United States* (3–3) West

Academic year—evening; summer 1956—Political Science 121 (3).

Judicial power of federal courts in constitutional interpretation. *First half:* emphasis on separation of powers, federal-state relationships, and taxation. *Second half:* emphasis on constitutional protection of civil rights.

125 *Legislative Organization* (3) Riddick

1957–58 and alternate years.

A study of Congress: constitutional aspects, legal analysis of make-up, and political organization. Political and parliamentary procedures used in the preparation and enactment of legislation.

130 *Maritime Law* (3)

Not offered 1956–57.

141 *The Development of Legal Institutions* (3) Brewer

1957–58 and alternate years.

Introduction to historical jurisprudence: primary attention to the origins of the Roman Law of Continental Europe and of the Anglo-Saxon Common Law.

145 *Political Parties and Politics* (3) LeBlanc

Fall—evening.

Organization and operations of political parties in the United States major and minor parties, bosses and corruption, nominations and elections, influence on President and Congress. Not open to students who have credit for former Political Science 116.

146 *Political Pressures and Public Reactions* (3) Ludden

Spring—morning; summer—1956.

Public opinion, special interest lobbies, and pressure groups as they operate on government to influence public policy.

151–52 *Public Administration* (3–3) LeBlanc

Academic year—morning; summer 1956.

Introductory survey of the theory and practice of governmental administration and its relation to politics, legislation, the courts, and non-governmental organizations and interests.

161–62 *Administrative Law* (3–3) LeBlanc

First half: not offered 1956–57. *Second half:* spring—evening.

Survey of relationships between administrative and judicial power, with consideration of problems of separation of powers, delegation of power, and administrative power over private rights.

171 *International Politics* (3) Ludden

Fall—morning and evening; summer 1956.

Basic forces underlying the conduct of international relations and the formation of foreign policy: power politics, imperialism, collective security, and international cooperation.

172 *International Organization: the United Nations* (3) Ludden

Spring—morning and evening.

Development and current operation of international organization within the system of sovereign states with emphasis on the United Nations.

177 *Recent Trends in Latin American Politics and Government* (3) Davis

Fall—morning.

Types of government, recent developments, and current political conditions in each of the twenty Latin American republics. May not be taken by students who have had Political Science 176 for credit.

178 *International Politics in the Western Hemisphere* (3) Davis

Spring—morning.

Political relations of the American Republics in the 19th and 20th centuries, the development of Pan Americanism and the Organization of American States. May not be taken by students who have had Political Science 175 for credit.

181–82 *International Law* (3–3) Brewer

Academic year—morning and evening; summer 1956—Political Science 181 (3).

Survey of the public law of nations with emphasis on the law of peace. Neutrality and the so-called law of war receive attention in the second semester.

191 *Government and Politics in the Middle East* (3)

Fall—evening.

International relations and governmental problems of the Arab world and adjacent areas.

194 *Far Eastern Politics: Contemporary International Relations in the Pacific Area* (3) Kinney

Spring—evening.

Background and development of the major states of East Asia with attention to the constitutional systems and the foreign politics of the region.

Third Group

209–10 *Seminar: the Federal Government of the United States* (3–3) West

Academic year—evening; summer 1956—Political Science 209 (3).

Advanced research emphasizing legislative problems of Congress and relations of Congress with the Administration.

212 *Seminar: Comparative Government* (3) Kraus

Spring—evening.

Selected topics and problems on comparative political and administrative institutions and the politics of modern constitutional governments and dictatorships.

213 *Readings in Comparative Government* (3) Kraus

Fall—evening; summer 1956.

Readings and group discussions on comparative political and administrative institutions with attention to legislatures, executive departments, political parties, etc.

217 *Seminar: Topics in Political Theory* (3) Kraus

Fall—evening.

Research and discussion on problems of modern political and constitutional theory, theoretical aspects of representative government, democracy, socialism, and totalitarianism.

220 *Reading Course in Political Theory* (3) Kraus

Spring—evening.

Readings and group discussions, principally on modern political and constitutional theory since the 17th century.

271–72 *Problems in International Politics and Organization* (3–3) Hadsel

Academic year—evening.

A seminar to develop techniques of research in recent international affairs and to examine developments in international politics and organizations.

273 *Public Opinion and Foreign Policy* (3) Ludden

Fall—evening.

Development, organization, and operation of international information programs by major world powers. Public opinion in the United States influencing the formation and conduct of foreign policy.

274 *Methods and Objectives of Foreign Policy* (3) Hadsel

Spring—evening.

Examination of the objectives of foreign policies of the major powers, with attention to political, economic, and military methods used to pursue these objectives.

277 *Seminar: Latin American Government* (3) Davis

Fall—evening.

Analysis of the political structures of selected Latin American republics. Two comparable governments studied each year.

278 *Seminar: Latin American Political Philosophy* (3) Davis

Spring—evening.

Research in political personalities and philosophies of 19th and 20th century Latin America.

279 *Reading Course in International Affairs* (3) Hadsel

1957–58 and alternate years.

Reading and discussion of basic materials designed to stimulate investigation of problems in the nature and development of international law, politics, and organization.

281–82 *Seminar: International Law and Relations* (3–3) Brewer

First half: fall—evening; summer 1956. *Second half:* not offered 1956–57.

Research topics in the public law of nations, with special attention to problems of pacific settlement, sanctions, war, neutrality, and state jurisdiction and to their political implications.

293–94 *Seminar: International Politics and Government in the Pacific Area* (3–3) Kinney

Academic year—evening.

Research and analysis of the major patterns of development in internal and international politics of the area, with advanced study of the governmental institutions of the Far East.

299–300 *Thesis* (3–3) The Staff

Academic year—as arranged; summer 1956.

PSYCHIATRY

Winfred Overholser, A.B., M.D., Sc.D., L.H.D., *Professor of Psychiatry*
Executive Officer

Addison McGuire Duval, M.D., *Clinical Professor of Psychiatry*

Leon Yochelson, A.B., M.D., *Clinical Professor of Psychiatry*

Henry Prather Laughlin, B.S., M.D., *Associate Clinical Professor of Psychiatry*

Marshall deGraffenried Ruffin, B.S., M.D., *Associate Clinical Professor of Psychiatry*

Sidney Berman, B.S., M.D., *Assistant Clinical Professor of Psychiatry*

Morris Kleinerman, Ch.D., M.B., *Assistant Clinical Professor of Psychiatry*

Jay Louis Hoffman, A.B., M.D., *Assistant Clinical Professor of Psychiatry*

Elmer Klein, B.S., M.D., *Assistant Clinical Professor of Psychiatry*

Anna Coyne Todd, A.B., M.D., *Assistant Clinical Professor of Psychiatry*

Norman Taub, B.S., M.D., *Assistant Clinical Professor of Psychiatry*

Harold Corson, M.D., *Assistant Clinical Professor of Psychiatry*

Anna Genevieve McEldowney, A.B., M.D., *Associate in Psychiatry*

Sarah Shtoffer Tenenblatt, A.B., M.D., *Associate in Psychiatry*

David Eden, A.B., M.D., *Associate in Psychiatry*

Robert Milton Greenberg, A.B., M.D., *Associate in Psychiatry*

Helen Pallister, Ph.D., *Clinical Instructor in Psychiatry (Psychology)*

Richard Allan Rogers, B.S., M.D., *Clinical Instructor in Psychiatry*

Richard Graham Board, B.S., M.D., *Clinical Instructor in Psychiatry*

John Anthony Farrell, M.D., *Clinical Instructor in Psychiatry*

William Deaver Kehne, A.B., M.D., *Clinical Instructor in Psychiatry*

Herman Arnold Meyersburg, B.S., M.D., *Clinical Instructor in Psychiatry*

Berman

165 *Dynamics of Personality Development*

Fall—1 hour a week.

An orientation course in the anatomical, physiological, and psychological growth and development of personality. Consideration of characteristics of structure, function, and development of the psyche leading to normal behavior as a basis for the study of the pathological. Evaluation of interpersonal relationships.

178 *Psychopathology* — Hoffman

Spring—1 hour a week.

Manifestations and understanding of various mental mechanisms and abnormal reaction-types, preceded by history of development of psychopathology and illustrated with case material.

266 *Psychiatry* — Overholser

Spring—1 hour a week.

History, etiology, symptoms, course, and treatment of the major psychoses with emphasis on the dynamics involving the person as a whole.

268 *Demonstration Clinics* — McEldowney, Tenenblatt

Spring—3 hours a week.

Presentation of clinical cases of major mental illnesses and primary behavior disturbances, correlating with Psychiatry 266. Each student examines patients under supervision. St. Elizabeths and D. C. General hospitals.

272 *Psychosomatic Aspects of General Medicine* — Ruffin

Spring—1 hour a week.

Somatic disorders of psychogenic origin. The role of personality reactions in functional and organic disorders.

324 *Psychoneurosis* — Laughlin

Spring—1 hour a week.

Etiology, psychopathology, clinical aspects, and treatment of various types of psychoneuroses. Medical Conference Room, D. C. General Hospital.

431–32 *Clinical Clerkship* — Duval, Yochelson, Ruffin, Taub, Corson, Pallister, Eden, Greenberg, Rogers, Board

Three weeks divided service as arranged during academic year.

Supervised examination, diagnosis, and treatment of ambulatory borderline cases in University Hospital and hospitalized cases in St. Elizabeths Hospital. Conferences for discussion of cases. Clinical application of psychiatric principles to general medical practice is stressed. University Hospital Inpatient and Outpatient Psychiatric clinics and St. Elizabeths Hospital.

PSYCHOLOGY

Mitchell Dreese, Ph.D., *Professor of Educational Psychology*
*Thelma Hunt, Ph.D., M.D., *Professor of Psychology, Executive Officer*
Henry Furness Hubbard, Ph.D., *Professorial Lecturer in Psychology*
Margaret Ives, Ph.D., *Professorial Lecturer in Psychology*
Curtis Edward Tuthill, Ph.D., *Associate Professor of Psychology*
Don Carlos Faith, Ph.D., *Associate Professor of Educational Psychology*
Willard Edmund Caldwell, Ph.D., *Associate Professor of Psychology*
James Norman Mosél, A.M., *Associate Professor of Psychology*
Bernard Hayman Fox, Ph.D., *Assistant Professor of Psychology*
Eva Mayne Johnson, A.M., *Assistant Professor of Psychology*
Clyde Lindley, A.M., *Lecturer in Psychology*

Bachelor of Arts with a major in Psychology (Columbian College—Departmental).—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 66, including Psychology 1 and 4, 22 or 29; Statistics 53.

The general requirements for the degree are stated on pages 82–87. The sixty required semester hours must include twenty-four hours in Psychology above 29, including Psychology 98, 131, 151 or 171, 191, and 196; and Physiology 115 or Psychology 118.

Master of Arts or *Master of Science in the field of Psychology (Columbian College).*—Prerequisite: the degree of Bachelor of Arts with a major in Psychology at this University, or the equivalent.

Required: the general requirements for the degree are stated on pages 89–92. Of the twenty-four required semester hours (exclusive of the thesis), a minimum of eighteen must be in third-group courses; a minimum of twelve must be in psychology, including Psychology 201 and 202; twelve may be in related fields approved by the Department.

Master's programs are available in the following fields of concentration: (1) tests and measurements, (2) counseling and guidance, (3) clinical-abnormal, (4) social, (5) personnel, (6) experimental, and (7) personality. For detailed requirements consult the Executive Officer of the Department.

Doctor of Philosophy (Graduate Council).—See page 98.

Bachelor of Arts in Government with a major in Business Administration (Personnel Management option) (School of Government).—See pages 187–88, 189.

Master of Arts in Personnel Administration or *Master of Arts in Government with a specialty in Counseling, Psychometrics, or International Communication (School of Government).*—See pages 192–94, 194, 195–96.

Master of Arts in Education in the fields of Employee Training and of Guidance (School of Education).—Prerequisite: a Bachelor's degree from an accredited institution and two years of successful teaching experience. The requirements for the degree are stated on pages 176–77.

* On sabbatical leave fall semester 1956–57.

First Group

1 *General Psychology (3)** The Staff

Fall—morning and evening; spring—morning and evening; summer 1956.

The fundamental principles underlying human behavior.

4 *Psychology of Adjustment* (3) The Staff

Fall—morning and evening; spring—morning and evening.

Processes involved in the total adjustment of the individual, with emphasis on social environment; development in the individual of adjustment techniques.

22 *Introduction to Educational Psychology* (3) Faith, Lindley

Fall—evening; spring—morning; summer 1956.

Consideration of individual and group differences, adjustments, and the psychology of learning in relation to education and training.

29 *Child Psychology* (3) Johnson

Fall—evening; spring—morning; summer 1956.

A genetic approach to the study of the child. Special emphasis is placed on the socialization process, learning, and the child's view of the world.

98 *Abnormal Psychology* (3) Hunt, Johnson

Fall—morning and evening; spring—morning; summer 1956.

The causes, diagnosis, treatment, and prevention of the various types of maladjustments and mental disorders. Prerequisite: 6 credits in psychology, or 3 credits in psychology and 6 credits in a biological science.

Second Group†

112 *Adolescent Psychology* (3) Lindley

Spring—evening.

Psychological characteristics and problems peculiar to adolescence, with emphasis on applications of psychology to solution of such problems.

118 *Physiological Psychology* (3) Fox

Spring—evening.

Structure, function, and phylogeny of receptors, nervous system, and effectors as mediators of behavior, including drives, learning, and emotions.

* Psychology 1 is prerequisite to all other courses in Psychology.
† Six credits in first-group courses are prerequisite to all second group courses.

121 *Educational Psychology* (3) Faith

Fall—as arranged; spring—as arranged.

Advanced course in educational psychology. Admission by permission of the instructor.

129 *Introduction to Counseling and Guidance* (3) Dreese

Fall—evening; summer 1956.

A survey of the basic principles, techniques, and procedures as applied to vocational, educational, and personal counseling.

131 *Psychological Tests* (3) Hunt

Fall—morning; spring—evening; summer 1956.

A survey of psychological tests and their more common uses in business, industry, government, law, medicine, and education. Materials fee, $7.

141 *Leadership, Group Behavior, and Student Life* (3) Faith

Fall—morning.

A survey of the foundations of leadership, of the factors which underlie effective participation in group activities, and of the interrelations between the student and his university.

144 *Personnel Psychology* (3) Hubbard, Mosél

Fall—evening; spring—morning; summer 1956.

The applications of psychology to personnel work in education, business, industry, and government.

146 *Problems in Human Relations* (3) Mosél

Fall—morning; spring—evening.

The application of psychological principles to understanding and improving personal and group relations. Emphasis will be upon case studies and specific problems drawn from life situations, with important attention to supervisory and administrative relationships. Prerequisite: Psychology 1 (or Psychology 145 for students in the special programs.)

148 *Psychology of Advertising and Market Research* (3) Mosél

1957–58 and alternate years.

The motivational and social dynamics of consumer behavior. Evaluation of the psychological effectiveness of products, media, and advertising and public relations programs. Consideration of current techniques and findings in motivational research.

151 *Social Psychology* (3) Tuthill

Fall—morning; spring—evening.

The social foundations of attitudes and behavior. Individual adjustment to group situations, such as the family, school, fraternity, and occupation. The psychological basis of race prejudice, nationalism, and war.

156 *Psychology of Propaganda and Public Opinion* (3) ———

Spring—evening; summer 1956.

The psychology of opinion formation, the measurement of opinion, the social determinants of attitudes, the psychological processes in propaganda, the bases of receptivity to propaganda, psychological warfare.

161 *Comparative Psychology* (3) Caldwell

Fall—as arranged.

A survey of psychological processes in infrahuman organisms, with special emphasis on the evolution of animal behavior from the lowest forms to man. Accompanied by laboratory work. Material fee, $10.

171 *Psychology of Personality* (3) Caldwell

Spring—morning; summer 1956.

Contemporary approaches to the study of personality. Prerequisite 12 credits in psychology, including Abnormal Psychology.

191 *Experimental Psychology* (3) Tuthill

Fall—afternoon; spring—evening.

The application of experimental methods to various psychological problems. Prerequisite: 12 credits in psychology and an elementary course in statistics. Material fee, $10.

192 *Problems in Experimental Psychology* (3) Caldwell, Fox

Fall—as arranged; spring—as arranged.

Opportunity for work on individual experimental projects. Prerequisite: Psychology 161 or 191 and permission of the instructor.

193–94 *Readings in Psychology* (3–3) The Staff

Academic year—as arranged; summer 1956—Psychology 193 (3).

Supervised readings on specific topics in psychology; with conferences; for undergraduate majors. Open only to seniors with 18 or more credits in psychology with a quality point index of 3.0 or higher. Special permission of staff member under whom course is to be taken is necessary.

196 *History and Systems of Psychology* (3) Caldwell

Fall—evening.

A survey of the contemporary schools of psychology. Prerequisite: 12 credits in psychology.

THIRD GROUP*

201 *Seminar: Advanced General Psychology* (3) Tuthill

Fall—afternoon; spring—evening.

General review of the field for graduate students with an intensive study of selected problems. Required in all graduate programs.

202 *Psychological Research Methods and Procedures* (3) Fox

Fall—evening; spring—afternoon.

Required of all Master of Arts candidates in psychology. Prerequisites: Experimental Psychology and statistics.

205–6 *Field Work in Psychology* (3–3) The Staff

Academic year—as arranged; summer 1956—Psychology 205 (3).

Supervised field work in agencies providing psychological service. Admission by permission of the Executive Officer of the Department.

207–8 *Readings in Psychology for Graduate Students* (3–3) The Staff

Academic year—as arranged; summer 1956—Psychology 207 (3).

Supervised readings with conferences on specified topics in psychology. Open only to students who have had course work in the field of the readings.

209 *Seminar: Psychology of Motivation* (3) Caldwell

Spring—evening.

A consideration of various theoretical approaches to the psychology of motivation and systematic concepts and experimental findings deriving from each approach.

212 *Seminar: Personality Evaluation by Projective Techniques* (3) Ives

Spring—evening.

* Open only to graduate students with 18 or more credits in psychology, except by special permission of Instructor and Executive Officer of the Department.

213 *Seminar: Clinical Psychology* (3) Ives

1956–57 and alternate years: fall—evening.

A study of the clinical applications of non-projective tests.

215 *Seminar: Advanced Study of Projective Techniques* (3) Ives

1957–58 and alternate years.

Primary emphasis upon the Rorschach Test. Prerequisite: Psychology 212.

220 *Seminar: Abnormal Psychology* (3) Hunt

Fall—evening.

An intensive study of a selected problem in the field of abnormal psychology.

221 *Seminar: Psychology of the Handicapped: Dynamics of Adjustment* (3) Hunt

Spring—evening.

The dynamics of adjustment and criteria of adjustment in general: the specific problems of adjustment in the handicapped.

222 *Seminar: Rehabilitation Counseling: Orientation and Survey of Field* (3) ———

Fall—evening.

Aims, function, and nature of the rehabilitation process; the special problems of counseling the handicapped.

223 *Seminar: Learning* (3) Fox

Fall—evening.

Covers theories of learning.

224 *Seminar: Medical Backgrounds for Rehabilitation Counseling* (3) ———

Spring—evening.

An elementary medical survey of the etiology, therapy, and prognosis of various disabling conditions and disorders. Somatic and psychogenic problems in handicaps.

225 *Seminar: Mental Hygiene* (3) Caldwell

Fall—evening; summer 1956.

A study of mental health problems with special attention to programs of prevention.

226 *Seminar: Clinical Psychology of Childhood* (3) Johnson

Spring—evening.

A survey of children's behavior and personality disorders.

227 *Seminar: Counseling and Guidance* (3) Dreese

Spring—evening.

Recent developments and current problems in vocational, educational, and personal guidance in various types of agencies with particular reference to education. Prerequisite: educational or psychological measurements and Psychology 129 or the equivalent.

228 *Seminar: Techniques of Counseling* (3) Dreese

Spring—evening.

Specific types of vocational, educational, and personal counseling problems approached through the case method. Prerequisite: recent previous course in counseling and guidance and familiarity with individual analysis methods.

229 *Seminar: Occupational and Educational Information* (3) Faith

Spring—evening.

Designed to acquaint vocational and educational counselors with the basic occupational and educational information necessary in counseling. Sources of data and techniques of collecting, analyzing, and disseminating for purposes of guidance.

231 *Test Construction* (3) Mosel

Fall—evening.

The principles underlying test construction; statistical techniques in the construction, evaluation, and standardization of psychological, educational, and vocational tests. Prerequisite: a course in tests and measurements and a course in statistics.

232 *Research: Test Construction* (3) Hunt

Fall—as arranged; spring—as arranged.

Individual projects in construction and evaluation of psychological, educational, or vocational tests. Prerequisite: Psychology 231 and permission of the instructor.

233 *Individual Psychological Testing* (3) Johnson

Fall—afternoon; spring—afternoon; summer 1956.

Instruction and practice in giving of the Binet Test and the Wechsler-Bellevue Test. Prerequisite an elementary course in tests and measurements. Material fee, $7.

234 *Seminar: Test Theory* (3) Mosél

1956–57 and alternate years: spring—evening.

236 *Seminar: Analysis of the Individual for Purposes of Counseling* (3) Faith

Fall—evening.

A detailed study of individual analysis techniques with practice in handling such methods. Prerequisite: an introductory course in educational or psychological measurements.

244 *Seminar: Job Analysis and Evaluation* (3) Mosél

Summer 1956.

245 *Seminar: Employee Motivation and Morale* (3) Mosél

Spring—evening.

Application of the principles of primary group functioning and group-centered administration to the problem of motivating employees, building morale, and strengthening human relations. Emphasis is upon use of group dynamics in supervision and leadership.

246 *Seminar: Personnel Measurement Techniques* (3) Mosél

Fall—evening.

Detailed consideration of interviews, personal data analysis, tests, ratings, and questionnaires in evaluating employability, job proficiency, and worker morale.

249 *Seminar: Human Engineering* (3) _____

Fall—evening.

Application of findings and methods of experimental psychology to design and operation of equipment and man-machine systems. Relation of capacities of the operator to information display systems, control mechanisms, work environment, and work methods.

251 *Seminar: Advanced Social Psychology* (3) Tuthill

Fall—evening.

Current research and theory in social psychology: group dynamics, ego-involvements, action research, and social interaction theory.

254 *Seminar: Group Dynamics* (3) Tuthill

1957–58 and alternate years.

The experimental study of small groups; autocratic and democratic group climates; interaction process analysis; Lewin's field-theoretical approach to individual and group processes.

255 *Seminar: Techniques of Opinion and Attitude Measurement* (3) Tuthill

1956–57 and alternate years: spring—evening.

Methods of attitude measurement (interviews, questionnaires, scales, polls) as currently used by private and governmental investigators. The place of attitude studies in schools, industry, government, etc.

261 *Seminar: International Communication* (3) Mosél

1957–58 and alternate years.

Techniques and principles of tactical and strategic psychological operations; psychological and ethnological foundations of international behavior and communication; the psychological effects of physical weapon systems.

272 *Seminar: Theories of Personality* (3) Caldwell

Fall—evening.

A survey of the various theories of personality, with emphasis upon theoretical problems and methodology in the field of personality study.

295–96 *Research in Psychology* (arr.) The Staff

Academic year—as arranged; summer 1956—Psychology 295 (arr.).

Individual research by student, carried out under supervision of staff member.

299–300 *Thesis* (3–3) The Staff

Academic year—as arranged; summer 1956—Psychology 299 (3).

Course Offered in Special Programs

In addition to the regular courses announced above the University offers the following course, which is available only to students enrolled in the Engineering Administration program.

145 *Principles of Human Relations* (3)

RADIOLOGY

William Woodrow Stanbro, M.D., *Professor of Radiology, Executive Officer*
Solomon Rodney Bersack, B.S., M.D., *Assistant Clinical Professor of Radiology*
Charlotte Patricia Donlan, A.B., M.D., *Assistant Clinical Professor of Radiology*
Harry Jay Kicherer, M.D., *Assistant Clinical Professor of Radiology*
Alvin Charles Wyman, A.B., M.D., *Associate in Radiology*
Herman Litwer, M.D., *Associate in Radiology*
George Tievsky, M.D., *Clinical Instructor in Radiology*
Uthai Vincent Wilcox II, M.D., *Clinical Instructor in Radiology*
Nan Poppell Van Wagenen, B.S., M.D., *Clinical Instructor in Radiology*
Charles Malcolm Weber, M.D., *Clinical Instructor in Radiology*

115–16 *Anatomy* — The Staff

Academic year—as arranged.

Correlation of gross and Roentgen anatomy.

220 *Principles of Radiology* — The Staff

Spring—as arranged.

Lectures and discussions.

313 *Advanced Radiological Diagnosis* — The Staff

Fall—as arranged.

Lectures and discussions.

421–22 *Clinical Studies* — The Staff

Students are assigned to the X-ray Department in rotation on a full-time basis for a specific period.

RELIGION

Joseph Richard Sizoo, A.M., S.T.D., D.D., Litt.D., *Milbank Professor of Religion*

Clifton Earl Olmstead, A.B., Th.D., *Associate Professor of Religion, Executive Officer*

Bachelor of Arts with a major in Religion (Columbian College—Departmental).—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 66, including Religion 9, 10, and 59–60.

Required: the general requirements as stated on pages 82–87, including a minimum of eighteen semester hours in religion beyond first-group courses.

First Group

9 *The Old Testament* (3) Sizoo

Fall—morning and evening.

A historical and literary approach to the study of the books of the Old Testament with special consideration given to the development of religious ideas, institutions, and outstanding personalities.

10 *The New Testament* (3) Sizoo

Spring—morning and evening.

A study of the literature of the New Testament from the standpoint of occasion, purpose, dominant ideas, and permanent values. Special emphasis on the approach, the structure, and the significance of the Gospels and Epistles.

59–60 *History of Religion* (3–3) Olmstead

Academic year—morning and evening; summer 1956—Religion 60 (3).

First half: primitive and ancient national religions; Confucianism, Taoism, Buddhism, Hinduism, and Shintoism—their historical setting, founders, and development of religious thought and culture. *Second half:* Judaism, Christianity, and Islam—analysis of their origin, evolution, and contemporary status.

Second Group

103 *The Prophets, Their Times and Their Message* (3)

Fall—morning.

The development of prophetism in the Old Testament; cultural, economic, psychological, and religious factors in the movement; elements of lasting value in the prophetic teaching. A few of the prophets will be selected for particular study.

104 *The Life and Thought of Jesus* (3) _____

Spring—morning.

A comprehensive study of the life and teachings of Jesus as they relate to problems of belief, standards of value, and patterns of life; the significance of the message of Jesus for our own times.

121 *Problems of Western Religious Thought* (3) Olmstead

Fall—morning.

The nature of religious truth and experience; the existence, character, and activity of God; the predicament of modern man; the problem of evil and suffering; eternal life; science and religion; the meaning of worship; religious views of history.

122 *Christian Ethics and Modern Society* (3) Olmstead

Spring—morning; summer 1956.

The nature and principles of the Christian life as developed by the Christian community; problems of personal conduct; the application of the Christian standard to family, social, and economic institutions.

131 *History of Christianity to the Reformation* (3) Olmstead

Not offered 1956–57.

The rise and expansion of Christianity, the development of Christian thought, the evolution of church organization and worship, the Renaissance and pre-Reformation dissent.

132 *History of Christianity Since the Reformation* (3) Olmstead

Not offered 1956–57.

The origin and development of Protestantism; the Roman Catholic revival; the status of the Eastern churches; doctrines, worship, expansion, church and state, and relation to modern thought and life.

141-42 *Religious Education* (3–3) _____

Academic year—morning.

Principles and practices of religious education in the home, church, and community; basic educational procedures and special techniques; organization and administration of religious education.

171 *Religion in American Culture* (3) Olmstead

Not offered 1956–57.

Growth of religious bodies and institutions in American culture, the heritage of religious freedom and diversity, religion and literature, revivalism and education, science and religious thought, divisions and cooperative movements in religion.

195–96 *Undergraduate Seminar in Religion* (3–3) Sizoo

Not offered 1956–57.

The development of religious concepts in the Judaeo-Christian tradition. Admission by permission of the instructor.

197–98 *Undergraduate Seminar in Religion* (3–3) Olmstead

Not offered 1956–57.

Selected personalities and problems in the history of Christian thought. Admission by permission of the instructor.

ROMANCE LANGUAGES AND LITERATURES

Henry Grattan Doyle, A.M., LL.D., Litt.D., *Professor of Romance Languages*
Merle Irving Protzman, Ph.D., *Professor of Romance Languages*
Louis Clark Keating, Ph.D., *Professor of Romance Languages, Executive Officer*
Alan Thomas Deibert, A.M., *Professor of Romance Languages*
Antonio Alonso, A.M., *Associate Professor of Spanish*
Rafael Supervía, Doctor en Derecho, *Associate Professor of Spanish*
James Willis Robb, A.M., *Assistant Professor of Romance Languages*
William Graham Clubb, Ph.D., *Assistant Professor of French*
Guido Mazzeo, A.M., *Lecturer in Romance Languages*
Joseph Louis Metivier, Jr., A.M., *Instructor in Romance Languages*

Bachelor of Arts with majors in (1) *French Literature*, (2) *Spanish American Literature*, and (3) *Spanish Literature (Columbian College—Field-of-Study)*.—Prerequisite: the Arts and Letters curriculum in the Junior College.

Required: the general requirements as stated on pages 82–87 and the grade "pass" on the major examination at the end of the senior year. The coordinated field of knowledge upon which the student will be examined includes the political, social, and cultural backgrounds of the literature studied; the writers, and their works. A reasonable proficiency in the spoken language is required. Majors in Romance Languages are strongly advised to study Latin, a knowledge of which is required for graduate work in most institutions. The Department of Romance Languages provides a proseminar in each of the major fields intended to assist the student in his preparation for the major examination.

Master of Arts (1) *French Literature*, (2) *Spanish American Literature*, and (3) *Spanish Literature (Columbian College)*.—Prerequisite: the degree of Bachelor of Arts in the appropriate field from this University, or the equivalent.

Required: the general requirements as stated on pages 89–92. The thirty hours of required work must include a thesis, for which six hours of credit are allotted. The remainder of the program is arranged in consultation with the student's major adviser.

Doctor of Philosophy (Graduate Council).—See page 97.

Bachelor of Arts in Education with teaching fields in French and in Spanish (School of Education).—Prerequisite: the Education curriculum, page 68.

Required: the French option, page 168 or the Spanish option, page 171; the professional courses listed on page 172.

FRENCH

First Group

1–2 *First-year French* (3–3) The Staff

A year course: credit is not given for the first half until the second half is completed.

First half: fall—morning and evening; spring—morning and evening;

summer 1956. *Second half:* fall—morning and evening; spring—morning and evening; summer 1956.

For beginners. Grammar, composition, drill in pronunciation, translation of modern French prose.

3–4 *Second-year French** (3–3) The Staff

A year course: credit is not given for the first half until the second half is completed.
First half: fall—morning and evening; spring—morning and evening; summer 1956. *Second half:* fall—morning; spring—morning and evening; summer 1956.

Advanced grammar and composition, reading in modern French prose, oral practice, introduction to French civilization. Prerequisite: French 1–2 or two years of high school French.

9–10 *French Conversation and Composition* (3–3) The Staff

Academic year—morning and evening; summer 1956.

49 *French Readings for Non-major Students* (3) Clubb

Fall—evening; spring—evening.

Primarily for graduate students preparing for reading examinations. Undergraduates admitted with permission of the instructor. No academic credit for graduate students.

51–52 *Survey of French Literature and Civilization** (3–3) Deibert

Academic year—evening.

The social, artistic, and cultural background of French civilization. Lectures, recitations, and informal discussions.

SECOND GROUP*

119–20 *French Literature of the Sixteenth Century* (3–3) Keating

1957–58 and alternate years.

Prose, poetry, drama, and memoirs of the French Renaissance; Rabelais, Montaigne, Marot, La Pléiade, etc. Class analysis of texts, collateral reading. Recommended: History 120.

121–22 *French Literature of the Seventeenth Century* (3–3) Protzman

1956–57 and alternate years: academic year—morning.

History, philosophy, criticism, memoirs, letters, eloquence, drama, fiction, poetry. Class analysis of texts; collateral reading.

* French 3–4 is required and French 51–52 is recommended as prerequisite to all second-group courses.

123–24 *French Literature of the Eighteenth Century* (3–3) Deibert

1957–58 and alternate years.

History, philosophy, criticism, letters, drama, fiction, poetry, the "salons," the idea of progress, the idea of science. Class analysis of texts, collateral reading, lectures on literature and history.

125–26 *French Literature of the Nineteenth Century* (3–3) Keating

1956–57 and alternate years: academic year—evening.

Romanticism and realism; fiction, poetry, drama, criticism. Class analysis of texts, collateral reading, lectures on literature and history.

127–28 *French Literature of the Twentieth Century* (3–3) Keating

1957–58 and alternate years.

Fiction, poetry, drama, criticism. Class analysis of texts, collateral reading, lectures on literature and history.

199–200 *Proseminar: Readings for the Major in French Literature* (3–3) Clubb

Academic year—as arranged.

Conferences and group discussions.

Third Group

227–28 *Seminar in Modern French Literature* (3–3) Keating

1956–57 and alternate years: academic year—afternoon.

Prerequisite: a second-group course in French literature.

229–30 *Seminar in Classical French Literature* (3–3) Protzman

1957–58 and alternate years.

Prerequisite: a second-group course in French literature.

249–50 *Old French** (3–3) Doyle

A year course: credit is not given for the first half until the second half is completed.
Academic year—as arranged.

Phonology and morphology of Old French, with an outline of its development through Vulgar Latin; survey of French literature to the end of the 13th century. Prerequisite: a second-group course in French literature; an elementary knowledge of Latin.

* Only one of the following courses: French 249–50, French 251–52, and Spanish 249–50 will be given in 1956–57, depending on demand.

251–52 *Middle French** (3–3) Doyle

A year course: credit is not given for the first half until the second half is completed.
Academic year—as arranged.

French literature of the 14th and 15th centuries. Class analysis of texts, collateral reading. Prerequisite: a second-group course in French literature. Knowledge of Old French is desirable.

299–300 *Thesis* (3–3) The Staff

Academic year—as arranged.

PORTUGUESE

First Group

1–2 *First-year Portuguese* (3–3)

A year course: credit is not given for the first half until the second half is completed.
Not offered 1956–57.

For beginners. Grammar, composition, drill in pronunciation, translation of modern Portuguese prose.

3–4 *Second-year Portuguese* (3–3)

A year course: credit is not given for the first half until the second half is completed.
Not offered 1956–57.

Advanced grammar and composition, reading of modern Portuguese prose, oral practice, introduction to Portuguese and Brazilian civilization. Prerequisite: Portuguese 1–2 or the equivalent.

Second Group

127–28 *Portuguese and Brazilian Literature* (2–2)

Not offered 1956–57.

Evolution of the Portuguese language; outline of the literature of Portugal (fall semester) and Brazil (spring semester). Lectures, readings, written reports. Conducted in Portuguese. Prerequisite: Portuguese 3–4 or the equivalent.

SPANISH

First Group

1–2 *First-year Spanish* (3–3) The Staff

A year course: credit is not given for the first half until the second half is completed.
First half: fall—morning and evening; spring—morning and evening;

* Only one of the following courses: French 249–50, French 251–52, and Spanish 249–50 will be given in 1956–57, depending on demand.

summer 1956. *Second half:* fall—morning and evening; spring—morning and evening; summer 1956.

For beginners. Grammar, composition, drill pronunciation, translation of modern Spanish prose.

3–4 *Second-year Spanish* (3–3) The Staff

A year course: credit is not given for the first half until the second half is completed.
First half: fall—morning and evening; spring—morning and evening; summer 1956. *Second half:* fall—morning; spring—morning and evening; summer 1956.

Advanced grammar and composition, reading of modern Spanish prose, oral practice, introduction to Hispanic civilization. Prerequisite: Spanish 1–2 or two years of high school Spanish.

9–10 *Spanish Conversation and Composition* (3–3) Alonso and Staff

Academic year—morning and evening; summer 1956.

49 *Spanish Readings for Non-major Students* (3) Robb

Fall—evening; spring—evening.

Primarily for graduate students preparing for reading examinations. Undergraduates admitted with permission of the instructor. No academic credit for graduate students.

51–52 *Survey of Spanish Literature and Civilization** (3–3) Supervía

Academic year—morning.

The social, artistic, and cultural background of Spanish civilization. Lectures, recitations, and informal discussion.

SECOND GROUP*

121–22 *Spanish Literature of the Golden Age* (3–3) Alonso

1956–57 and alternate years: academic year—evening.

Lope de Vega, Calderón; the classic drama, the ballad, lyric poetry. Class analysis of texts, collateral reading, lectures on literature and history.

123–24 *Cervantes: the Prose of the Golden Age* (3–3) Doyle

1957–58 and alternate years.

Life and works of Cervantes. The Quixote, the Novelas Ejemplares, and other works.

* Spanish 3–4 is required and Spanish 51–52 is recommended as prerequisite to all second-group courses in Spanish.

125–26 *Modern Spanish Literature* (3–3) Doyle

1956–57 and alternate years: academic year—morning.

Prose and poetry of the 18th and 19th centuries. Class analysis of texts, collateral readings, lectures on literature and history.

127–28 *Contemporary Spanish Literature* (3–3) Supervía

1957–58 and alternate years.

Prose and poetry of the latter part of the 19th and 20th centuries. Class analysis of texts, collateral reading, lectures on literature and history.

151–52 *The Spanish American Novel* (3–3)

Not offered 1956–57.

Development of the novel in Spanish America. Lectures, collateral reading, and class analysis of texts.

155–56 *Spanish American Literature to 1880* (3–3)

1957–58 and alternate years.

The literature of Spanish America from the colonial period to the latter part of the 19th century. Lectures, collateral reading, reports, and class analysis of important works.

157–58 *Spanish American Literature Since 1880* (3–3)

1956–57 and alternate years: academic year—evening.

The literature of Spanish America from 1880 to the contemporary period. Lectures, collateral reading, reports, and class analysis of important works.

197–98 *Proseminar: Readings for the Major in Spanish American Literature* (3–3)

Academic year—as arranged.

Conferences and group discussions.

199–200 *Proseminar: Readings for the Major in Spanish Literature* (3–3) Alonso

Academic year—as arranged.

Conferences and group discussions.

THIRD GROUP Alonso

225–26 *Seminar in Spanish Literature* (3–3)

1957–58 and alternate years.

Prerequisite: a second-group course in Spanish literature.

227–28 *Seminar in Spanish American Literature* (3–3)

Not offered 1956–57.

Prerequisite: a second-group course in Spanish American literature.

249–50 *Old Spanish** (3–3) Doyle

A year course: credit is not given for the first half until the second half is completed.
Academic year—as arranged.

Literature and philology: *Poema del Cid, Libro de Buen Amor, Conde Lucanor, etc.*; Menéndez Pidal's *Manual de gramática histórica española* and Ford's *Old Spanish Readings*. Prerequisite: a second-group course in Spanish literature; an elementary knowledge of Latin.

299–300 *Thesis* (3–3) The Staff

Academic year—as arranged.

* Only one of the following courses: French 249–50, French 251–52, and Spanish 249–50 will be given in 1956–57, depending on demand

SECRETARIAL STUDIES

Mildred Hollander Shott, A.M., *Associate Professor of Secretarial Studies, Executive Officer*

William Hughes Westbrook, A.B., *Associate in Secretarial Studies*

Associate in Arts (Junior College—two-year vocational curriculum in Secretarial Studies).—For curriculum, see page 73.

Bachelor of Arts in Education with a teaching field in Business Education (School of Education).—Prerequisite: the Education curriculum, page 68.

Required: the Secretarial Studies option, page 166, and the professional courses listed on page 172.

First Group

1 *Elementary Typewriting* (3) Shott, Westbrook

Fall—afternoon and evening; spring—evening; summer 1956.

Fundamental techniques of typewriting, basic styles of business letters, introduction to tabulation, and preparation of general office forms. Laboratory fee, $7.

2 *Intermediate Typewriting* (3) Shott and Staff

Fall—evening; spring—afternoon and evening; summer 1956.

The business letter and its arrangement, advanced tabulation, manuscript typing, office forms, stencil cutting, and legal documents. Prerequisite: Secretarial Studies 1 or the equivalent; ability to type accurately at 30 words a minute. Laboratory fee, $7.

11 *Elementary Shorthand and Transcription* (3) Shott, Westbrook

Fall—morning and evening; spring—evening; summer 1956.

A study of the principles of Gregg shorthand correlated with dictation and transcription. *Minimum* dictation speed of 60 words a minute attained. Laboratory fee, $3.

12 *Intermediate Shorthand and Transcription* (3) Shott and Staff

Fall—evening; spring—morning and evening.

Review of the principles of Gregg shorthand. Dictation and transcription on general and specialized business subjects. *Minimum* dictation speed of 80 words a minute attained. Prerequisite: Secretarial Studies 11 or the equivalent; ability to take dictation at 60 words a minute. Laboratory fee, $5.

15 *Advanced Shorthand, Typewriting, and Transcription* (3) — Shott and Staff

Fall—morning and evening.

Dictation and transcription involving vocabularies in specific businesses. *Minimum* speed of 100 words a minute attained in dictation. Prerequisite: Secretarial Studies 12 or the equivalent. Laboratory fee, $5.

16 *Secretarial Shorthand, Typewriting, and Transcription* (3) — Shott and Staff

Spring—morning and evening.

Dictation and transcription involving vocabularies used in the legal and medical professions. *Minimum* dictation speed of 120 words a minute attained. Prerequisite: Secretarial Studies 15 or the equivalent. Laboratory fee, $5.

51 *Business Correspondence* (3) — Shott

1956–57 and alternate years: fall—morning; 1957–58 and alternate years: fall—evening.

Development of the technique of effective communication with reference to business letters and forms. Survey and analysis of current business literature.

54 *Secretarial Practice* (3) — Shott

Spring—morning and evening.

A thorough study of secretarial problems and procedures. Practice in the use of secretarial equipment and supplies. The study of secretarial personality and office relationships.

SLAVIC LANGUAGES AND LITERATURES

Helen Zhemchuzhnaya Yakobson, B.S., *Assistant Professor of Russian, Executive Officer*
Peter Zouboff, Ph.D., *Lecturer in Russian*

1–2 *First-year Russian* (3–3) Yakobson and Staff

First half: fall—morning and evening; summer 1956. *Second half:* fall—evening; spring—morning and evening; summer 1956.

A beginner's course in fundamentals of grammar and pronunciation with graded reading, oral drill, and written practice.

3–4 *Second-year Russian* (3–3) Yakobson and Staff

First half: fall—morning and evening. *Second half:* spring—morning and evening.

Systematic review of grammar. Study of special problems of Russian morphology and syntax. Oral and written reports on assigned topics.

9–10 *Russian Conversation* (3–3) Zouboff

Academic year—evening.

Prerequisite: Russian 1–2, 3–4, and the permission of the instructor.

101–2 *Rapid Readings in Russian* (3–3) Yakobson

1957–58 and alternate years.

Readings and translations of classic and modern literary texts and periodical literature.

103–4 *Scientific Russian* (3–3) Yakobson

1956–57 and alternate years: academic year—evening.

Reading and translation of technical texts.

SOCIOLOGY*

Harold Loran Geisert, Ph.D., *Professor of Sociology, Executive Officer*
Carr Bartleson Lavell, A.M., *Associate Professor of Sociology*
Richard Walton Stephens, A.M., *Assistant Professor of Sociology*
Henry Davidson Sheldon, Ph.D., *Lecturer in Sociology*

Bachelor of Arts with a major in Sociology (Columbian College—Departmental).—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 66, including Sociology 1–2.

Required: the general requirements as stated on pages 82–87, including Sociology 172 and 181 and eighteen hours in second- or third-group courses in Sociology.

Master of Arts in the field of Sociology (Columbian College).—Prerequisite: the degree of Bachelor of Arts with a major in Sociology in this University, or the equivalent.

Required: the requirements for the degree are stated on pages 89–92. The thirty hours of required work must include a minimum of eighteen hours in third-group courses.

First Group

1–2 *Man in Modern Society (3–3)** — **The Staff**

First half: fall—morning and evening; spring—morning; summer 1956.
Second half: spring—morning and evening.

Origins and development of culture, the impact of groups and institutions on man's social behavior. Factors producing social problems; individual, community, national, and international disorganization.

Second Group

121 *Cultural Anthropology* (3) — **Geisert**

1956–57 and alternate years: fall—morning.

Origins and development of social life and customs, organization and structure of primitive human relationships, the dynamics of culture patterns.

122 *Culture and Personality* (3) — **Stephens**

1956–57 and alternate years: spring—morning; summer 1956.

Influences of group membership and cultural conditions on personality; socio-cultural factors in mental health; and the relationship of personality to caste, class, and occupation.

* Sociology 1 is prerequisite to all other courses in Sociology.

123 *Fields of Social Work* (3)

1957–58 and alternate years.

Introduction to the nature and scope of social work; the development of social work programs; functions of social case work, social group work, and social action.

124 *Public Welfare* (3)

1957–58 and alternate years.

Organization of public welfare—federal, state, and local; the care of various classes of dependents and methods of treatment; personnel, finance, and public relations.

126 *Urban Sociology* (3) Geisert

Spring—morning.

Factors in the growth of cities: problems of urban living, group life, personality, urban housing, and city planning.

127 *Community Organization* (3)

1957–58 and alternate years.

Social interaction and social disorganization in American communities, dynamics of leadership, methods of organizing social forces to meet community needs.

131 *Social Institutions* (3) Sheldon

1956–57 and alternate years: fall—evening.

Functional analysis of basic social institutions: family, education, religion, and state in the structure of American society.

132 *Courtship and Marriage* (3) Lavell

Spring—morning; summer 1956.

Dating and courtship as social processes, reasons for marriage, marriage laws, mate selection, factors in marriage adjustment, prediction and counseling.

133 *The Family in Modern Society* (3) Lavell

Fall—evening.

Historical development of the family as a social institution, parent-child relations, family problems, disorganization and divorce, and family reorganization.

134 *Sociology of Child Development* (3) Sheldon

1956–57 and alternate years: spring—evening.

Socialization of the child through the home and other social institutions, the changing status of childhood, dependent and handicapped children.

135–36 *Crime and Delinquency* (3–3) Geisert

Academic year—morning.

Nature and distribution of crime, factors producing criminal behavior, police and court systems, treatment and prevention of crime.

141 *Population and Migration* (3) Stephens

1956–57 and alternate years: fall—morning.

Composition of populations, theories and trends in population growth, factors producing population movements, effects of migration, population policies.

151 *Human Relations in Industry* (3) Lavell

1956–57 and alternate years: fall—morning.

Sociological analysis of work situations, occupational mobility, development of the labor movement, industrial leadership and morale.

161 *Social Stratification; Class and Status* (3)

1957–58 and alternate years.

Nature of class structure, patterns of status, prestige relations in American society, differential class behavior, and analysis of comparative social structure.

162 *Social Movements* (3) Lavell

1956–57 and alternate years: spring—evening.

Major contemporary movements examined as aspects of social change and collective behavior. Designed to disclose competing ideologies and to show the way in which social movements develop.

164 *Social Control* (3)

1957–58 and alternate years.

Informal and formal phases of human control, analysis of methods of control used in modern society and the situations in which they occur, policies and techniques of control.

172 *Contemporary Social Theory* (3) Stephens

Spring—evening.

Systematic study of the important schools of contemporary sociology, including recent European as well as American developments; an evaluation of the scientific contributions of each school.

181 *Methods of Social Research* (3) Stephens

Fall—evening.

Analysis of social research techniques and the scientific method; application to social data of the case study; social survey; statistical, sociometric, and experimental methods.

221 *Seminar: Current Trends in Sociology* (3) Geisert

1956–57 and alternate years: fall—evening.

Analysis and evaluation of recent theories of social systems and an appraisal of the roles of systematic theory in sociology.

222 *Seminar: Anthropological Theory* (3) Geisert

1956–57 and alternate years: spring—evening.

Analysis of the theoretical postulates and assumptions underlying the development of modern cultural anthropology; the concepts of culture, cultural dynamics, and cultural integration.

224 *Seminar: Social Case Work for Rehabilitation Workers* (3)

Not offered 1956–57.

Nature, functions, and techniques for social case work. Interviewing, integration of information about patient or counselee, relationship of social case work to other techniques.

225 *Seminar: Community Organization and Resources* (3) The Staff

Fall—evening.

Study of the organization of social agencies in a community, how to use social agencies, problems of inter-agency cooperation, relationship to rehabilitation counseling.

227 *Seminar: Social Relations* (3)

1957–58 and alternate years.

General characteristics of small groups and their measurement, sociography of groups, evaluation of small group theory and sociometry, other techniques of group research.

228 *Seminar: Mass Communications* (3)

1957–58 and alternate years.

The communication process; barriers to communication; structure and function of communication in society; content, control, support, and effects of mass communication.

295–96 *Research* (arr.) The Staff

Academic year—as arranged; summer 1956.

299–300 *Thesis* (3) The Staff

Academic year—as arranged; summer 1956.

SPEECH

Lubin Poe Leggette, A.M., *Depew Professor of Speech, Executive Officer*
Calvin Weir Pettit, Ph.D., *Professor of Speech; Director of Speech Clinic*
George Francis Henigan, Jr., Ph.M., *Associate Professor of Speech*
Edwin Lockwood Stevens, A.M., *Associate Professor of Speech*
Edith Shores Surrey, A.M., *Assistant Professor of Speech*
Lee Sheward Bielski, A.M., *Assistant Professor of Speech*
Fred Wohlwend Stuart, *Lecturer in Speech*
Marjorie Prussing, *Associate in Speech*

Bachelor of Arts with a major in Speech (Columbian College—Departmental).—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 66 including Speech 1, 2, 11, 32.

Required: the general requirements as stated on pages 82–87, including the passing of a speech proficiency test early in the program, Speech 101, 121, 154, 175, and a minimum of twelve additional hours in second-group courses in the speech arts or speech science, as approved by the adviser.

Bachelor of Arts with a major in Dramatic Art (Columbian College).—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 66, including twelve hours in the basic courses in speech and six hours in English 51–52, 71–72, or 91–92.

Required: the general requirements as stated on pages 82–87, including the passing of a speech proficiency test early in the program, Speech 101–2, a minimum of nine additional hours in theater arts in the Speech Department and nine hours in dramatic literature in the English Department, as approved by the adviser.

Bachelor of Arts in Education with a teaching field in Speech (School of Education).—Prerequisite: the Education curriculum, page 68.

Required: the Speech option, page 171, and the professional courses listed on page 172.

First Group

A *Speech Clinic* — Pettit and Staff

Fall—as arranged; spring—as arranged; summer 1956.

Individual or group lessons, without academic credit, for such speech difficulties as lisping, cleft palate, articulatory problems, and stuttering. Fee: for individual lesson, $7; for group lesson, $4.

B *American Speech for Foreign Students* (3) — Bielski

Fall—evening; spring—as arranged; summer 1956.

Class limited to foreign-born students. Instruction in the formation of the sounds of spoken English, with emphasis on rhythm and inflection. The International Phonetic Alphabet is used. Recording fee, $5.50.

1 *Effective Speaking* (3) Leggette and Staff

Fall—morning, afternoon, and evening; spring—morning, afternoon, and evening; summer 1956.

Preparation and delivery of extempore speeches; developing confidence and poise, body and voice control; selecting and organizing material. Recording fee, $4.

2 *Persuasive Speaking* (3) The Staff

Fall—evening; spring—morning and evening.

A continuation of Speech 1, which is prerequisite, with emphasis on speech composition and elementary principles of persuasion.

11 *Training the Speaking Voice* (3) The Staff

Fall—morning, afternoon, and evening; spring—morning and evening; summer 1956.

Developing ease, naturalness, and clarity in the speaking voice. Analysis of individual voices through recordings. Phonetic approach to the study of the sounds of English, the standards of speech. Class instruction in the problems of rate, volume, pitch, and quality. Recording fee, $4.

32 *Oral Reading* (3) The Staff

Fall—morning; spring—morning; summer 1956.

Reading to others, theory and practice in the problems of interpreting the printed page. Prerequisite: Speech 11 or the permission of the instructor. Recording fee, $4.

SECOND GROUP

101 *Voice and Phonetics* (3) Pettit

Fall—evening.

The International Phonetic Alphabet and its application to the student's own speech improvement; also personal application to such fields as theater, public speaking, speech correction, radio, and foreign languages. Recording fee, $4.

102 *Oral Interpretation of Literature* (3) Leggette

Spring—morning.

Theory and practice in the problems of communicating meaning and emotion. Selections for study include poetry and prose. Prerequisite: Speech 32 or permission of the instructor. Recording fee, $4.

121 *Group Discussion and Conference Leadership* (3) Stevens

Fall—evening; summer 1956.

The process of thinking and problem solving in committees and small

groups, and the methods of leading discussions and conferences. Prerequisite: 6 hours of speech or the permission of the instructor.

126 *Public Discussion and Debate* (3) Henigan

Spring—afternoon.

Principles and types of public discussion and debate; practice in argumentative speaking on questions of current interest. Prerequisite: 6 hours of speech or the permission of the instructor.

133–34 *Radio and TV Broadcasting* (3–3) Stuart

Academic year—evening.

Industrial development, station organization and management, equipment, production techniques; practice in preparation and performance of programs. Admission by permission of the instructor. Recording fee, $8 a semester.

141 *Speeches for Special Occasions* (3) Henigan

Fall—morning.

The preparation and presentation of speeches for formal occasions with emphasis on the psychology of the audience. Prerequisite: 6 semester hours of speech.

153 *Acting* (3) Leggette

Fall—afternoon.

Study and practice in the fundamentals of acting technique. Prerequisite: permission of the instructor. Laboratory fee, $5.

154 *Play Production* (3) Leggette

Spring—afternoon.

Fundamentals of play production. Under the supervision of the instructor, students prepare one-act plays for presentation. Prerequisite: permission of the instructor. Laboratory fee, $5.

155–56 *Play Production Practice* (1–1) The Staff

Academic year—as arranged.

Practical work in theater.

166 *History of the Theater* (3)

Not offered 1956–57.

A general survey of the rise of the theater, the Classical, Medieval, Renaissance, later English and Continental, and the Modern theater. Admission by permission of the instructor.

169 *Creative Dramatics and Children's Theater* (3) Prussing

Fall—evening; spring—evening.

A study of creative dramatics and its use as a learning tool, with problems and experience in producing children's plays.

175–76 *Speech Correction* (3–3) Pettit

Academic year—evening.

A study of the causes of the disorders of speech with emphasis on methods in diagnosis and treatment of defective speech. Admission by permission of the instructor.

177–78 *Clinical Practice in Speech Therapy* (1–1) The Staff

Academic year—as arranged; summer 1956.

Supervised case work in remedial speech—the University Speech Clinic, District of Columbia Crippled Children's Society, and public school system. This course may be repeated for a total of 6 semester hours. Prerequisite: Speech 175.

180 *Speech Pathology* (3) Pettit

Not offered 1956–57.

An advanced study of the causes and symptoms of the major physiogenic and psychogenic disorders. Admission by the permission of the instructor.

182 *Introduction to Hearing Problems* (3) Pettit

Spring—evening.

A study of the field of audiology including anatomy of the ear, tests of hearing, speech reading, and auditory training. Admission by permission of the instructor.

183–84 *Clinical Practice in Hearing Therapy* (1–1) The Staff

Academic year—as arranged; summer 1956.

Supervised case work with persons handicapped with hearing losses—the University Speech Clinic and the Washington Hearing Society. This course may be repeated for a total of 3 semester hours. Prerequisite: Speech 182.

192 *Proseminar: Speech Correction* (3) The Staff

Spring—evening.

STATISTICS

Frank Mark Weida, Ph.D., *Professor of Statistics, Executive Officer*
Everett Herschel Johnson, Ph.D., *Professor of Statistics*
Solomon Kullback, Ph.D., *Professorial Lecturer in Statistics*
_____, *Associate Professor of Statistics*
Chester Hayden McCall, Jr., A.M., *Assistant Professor of Statistics*

Bachelor of Arts or *Bachelor of Science with a major in Mathematical Statistics (Columbian College—Field-of-Study).*—Prerequisite: the Arts and Letters or the Science curriculum, respectively, in the Junior College, see pages 66 and 67. Electives must include Mathematics 12, 19, and 20; Statistics 91–92; and Philosophy 121 and 122.

Required: the general requirements stated on pages 82–87, including Statistics 117, 118, 155–56, 157–58, and 197–98; a minimum of twenty-four semester hours of approved courses in departments in the Division of Mathematics and the Physical Sciences or in departments in the Division of the Natural Sciences or in departments unrelated to Statistics; and the grade of "pass" on the major examination at the end of the senior year. For further details, consult the adviser.

Master of Arts or *Master of Science in the field of Mathematical Statistics (Columbian College).*—Prerequisite: a Bachelor of Arts or Bachelor of Science degree, respectively, with a major in Statistics at this University, or the equivalent.

Required: the general requirements as stated on pages 89–92. The required thirty semester hours, in addition to a thesis in Statistics, includes at least twelve hours to be selected from approved third-group courses in Statistics. The remaining twelve hours may be selected from graduate work offered by departments in the Division of Mathematics and the Physical Sciences or by departments in the Division of the Natural Sciences with the approval of the adviser.

Doctor of Philosophy (Graduate Council).—See page 98.

Bachelor of Science in Engineering with an option in Statistics (School of Engineering).—For curriculum requirements, see pages 143–44 and 146.

Bachelor of Arts in Government and *Master of Arts in Government with major in Business and Economic Statistics (School of Government).*—See pages 187–88, 191; 192–94.

First Group

51 ***Introduction to Business and Economic Statistics*** **(3)** — The Staff

Lecture (2 hours), laboratory (2 hours).

Fall: lecture—morning and evening, laboratory—afternoon and evening; spring—morning and evening; summer 1956.

Survey of elementary principles and procedures for presenting, analyzing, and interpreting statistical data; consideration of characteristic values; measures of variability, sampling processes, index numbers, time series analysis, and simple correlation. Prerequisite: one entrance unit in algebra. Laboratory fee, $9.

52 *Mathematics of Finance* (3) — The Staff

Fall—morning and evening; spring—morning, afternoon, and evening; summer 1956.

Interest and discount, annuities, valuation of stocks and bonds, sinking funds, amortization, valuation of depletable assets, depreciation, building and loan associations. Prerequisite: one entrance unit in algebra.

53 *Introduction to Statistics in Psychology and Education* (3) — The Staff

Lecture (2 hours), laboratory (2 hours).
Fall: lecture—morning and evening, laboratory—afternoon and evening; spring—evening; summer 1956.

Sources of data, tabulation, charts and graphs, averages, dispersion, quartiles and percentiles, raw scores and derived scores, profiles, norms and their use, frequency distributions, intelligence and other quotients, reliability and validity of tests, normal curve, correlation, elementary sampling, statistical error, limitations of statistics. Prerequisite: one entrance unit in algebra. Laboratory fee, $9.

91–92 *Principles of Statistical Methods** (3–3) — McCall

A year course: credit is not given for the first half until the second half is completed.
Academic year: lecture (2 hours), laboratory (2 hours)—evening; summer 1956.

This course emphasizes the meaning, uses, and applications of: variates and attributes, measurement and enumeration, averages and dispersion, frequency distributions and their characteristics, errors of measurement and their control, index numbers, trends, cyclical relatives, purposive and random sampling in theory and practice and their errors and estimates, correlation in theory, practice, and applications. Prerequisite: one entrance unit in algebra. Laboratory fee, $9 a semester.

Second Group

105 *Statistics in Psychology and Education* (3) — McCall

Spring: lecture (2 hours), laboratory (2 hours)—morning.

Advanced study of correlation and frequency analysis, sampling theory, factor analysis, and applications to specific problems utilizing case method of study in so far as possible. Original work is required of each student. Prerequisite: Statistics 53. Laboratory fee, $9.

109 *Managerial Statistics* (3) — Johnson

Not offered 1956–57.

Role of statistics and the contribution of statistical procedures in various phases of business management with emphasis on the need for

* Statistics 91–92 is for Statistics majors, for students in engineering and in the biological and physical sciences.

and usefulness of the statistical method rather than the mechanics of analysis. Subject matter comprises sources and methods for collecting data, effective forms of presentation, techniques for summarizing and analyzing quantitative and qualitative information, interpretation of and inferences from available data. Admission by permission of the instructor or following Statistics 51.

110 *Quality Control Techniques* (3) Johnson

Not offered 1956–57.

Characteristics; scientific basis; reduction in cost of inspection, rejections, and tolerance limits; quality as an attribute; distribution of quality characteristics; laws basic to control; statistical and maximum control; detection of lack of control. Admission by permission of the instructor or following Statistics 51.

111 *Business and Economic Statistics I* (3) Johnson

Fall—morning and evening.

Statistical processes as related to particular types of problems encountered in business administration and economic research. Subject matter comprises characteristic values, measures of variability, sampling processes, sampling distributions, and simple correlation. Admission by permission of the instructor.

112 *Business and Economic Statistics II* (3) Johnson

Spring—morning and evening.

Application of statistical methods to specific problems of business administration and economics. Subject matter comprises multiple and partial correlation, time series analysis, index numbers, business cycles, demand functions, and depreciation schedules. Prerequisite: Statistics 111 or the equivalent.

117 *Analysis of Variance* (3) McCall

Fall—evening; summer 1956.

The analysis of variance and covariance to segregate factors producing significant variation, a method to estimate experimental error, multiple classification with unequal class frequencies. Prerequisite: Statistics 91–92.

118 *Correlation and the Chi-Square Test* (3) McCall

Spring—evening; summer 1956.

Advanced study of simple, partial, and multiple correlation. Rank correlation, the method of contingency, and the problem of normal and non-normal populations. Tests of independence, likeness, and goodness of fit. Prerequisite: Statistics 91–92.

155–56 *Mathematical Probability* (3–3) Weida

A year course: credit is not given for the first half until the second half is completed.
Academic year—evening.

Definitions, enumeration of cases, total and compouund probability, repeated trials, Bayes' theorem and postulate, Bernoulli's theorem and its experimental verification, mathematical expectation, law of large numbers and its applications. Prerequisite: Mathematics 20 and Statistics 91–92.

157–58 *Mathematical Statistics* (3–3) Weida

A year course: credit is not given for the first half until the second half is completed.
Academic year—evening.

Statistics as a science, types of problems, relative frequency and probability, binomial and multinomial distributions, Pearson system of curves, Gram-Charlier series, Cauchy distribution, correlation by regression method, Lexis theory of dispersion, generating functions, simple sampling theory, moments and semi-invariants. Prerequisite or concurrent registration: Statistics 155–56.

195–96 *Reading and Research in Business and Economic Statistics* (3–3) Johnson

Academic year—as arranged.

Admission by permission of the instructor.

197–98 *Statistical Mathematics** (3–3) Weida

A year course: credit is not given for the first half until the second half is completed.
Academic year—evening.

Matrix algebra, quadratic forms, contour integration, measure theory, Stieltjes integration, Cauchy theory of residues, n-dimensional geometry in flat spaces. Prerequisite: Mathematics 139 or the equivalent.

199–200 *Proseminar: Theoretical and Applied Statistics* (3–3) Weida

Academic year—as arranged.

In addition to the study of recent advances in statistical methods, this course is designed to coordinate the content of the baccalaureate major. Admission by permission of the instructor.

THIRD GROUP* Weida

201 *Design of Experiments* (3)

Not offered 1956–57.

Relative merits of random, repeated, stratified, and double sampling.

* Statistics 197–98 is prerequisite to all third-group courses.

Fisher-Pitman method of randomization; randomized blocks; Latin squares; factorial design; confounding, partial confounding.

202 *Theory of Estimation and Testing Hypotheses* (3) Weida

Not offered 1956–57.

Statistical hypotheses; maximum likelihood estimate; Markoff's best estimate; Neyman-Pearson theory of testing hypotheses; Bayes' theory; consistent, efficient, and sufficient statistics; theory of confidence intervals.

203–4 *The Theory of Econometrics* (3–3) Johnson

A year course: credit is not given for the first half until the second half is completed.
Not offered 1956–57.

Statistical methods applied to analysis of production, supply, and demand; utility and disutility; interest and taxation; exchange. Emphasis on interpretation of results in terms of probability, correlation, and regression of time series. Admission by permission of the instructor.

205–6 *Advanced Business and Economic Statistics* (3–3) Johnson

Not offered 1956–57.

Application of statistical methods to specific problems utilizing case method when possible. Emphasis on source materials, role of statistical methods, techniques of analysis, interpretation and presentation of results. Original work is required of each student. Prerequisite: Statistics 112 or the equivalent.

257–58 *Advanced Mathematical Statistics* (3–3) Weida

A year course: credit is not given for the first half until the second half is completed.
Not offered 1956–57.

Mathematical basis of distribution functions moments and cumulants, probability and likelihood, sampling distributions exact and approximate. Chi-square distribution, association and contingency, various conceptions of correlation, individual difference problem, time series, regression analysis, analysis of variance, theories of inference.

259–60 *Advanced Mathematical Probability* (3–3) Kullback

A year course: credit is not given for the first half until the second half is completed.
Not offered 1956–57.

Modern theories and asymptotic laws; elementary theory of definite

integration; limit theorems in probability; the contributions of Cramer, Frechet, Kolmogoroff, Khintchine. Prerequisite: Statistics 257–58 or the equivalent.

263–64 *Statistical Inference* (3–3)

A year course: credit is not given for the first half until the second half is completed.
Academic year—evening.

Sample space; methods for estimating population parameters; fiducial inference and its application to testing hypotheses; valid, efficient, and exact estimation; Student's distribution; variance distribution; sampling statistics, i.e., moments and cumulants used as estimates of population parameters and used to test hypotheses. Prerequisite or concurrent registration: Statistics 257–58 or the equivalent.

265–66 *Multivariate Analysis* (3–3)

A year course: credit is not given for the first half until the second half is completed.
Academic year—evening.

Tests of significance, generalized variance and covariance, tests of independence, canonical and vector correlations, multivariate, normal distribution, generalized Student's ratio, problems of estimation, applications to factor analysis.

Weida

267–68 *Characteristic Functions* (3–3)

A year course: credit is not given for the first half until the second half is completed.
Not offered 1956–57.

Fourier integrals, set functions, inversion formulas, limit theorems, applications to the distribution problem in statistics.

Kullback

269–70 *Sequential Testing* (3–3)

A year course: credit is not given for the first half until the second half is completed.
Not offered 1956–57.

Efficiency of sequential tests, sequential probability ratio test, expected number of observations necessary for a decision, truncated sequential analysis, sequential tests of single and composite hypotheses.

Weida

295–96 *Reading and Research* (3–3)

Academic year—as arranged.

Admission by permission of the instructor.

Weida

299–300 *Thesis* (3–3)

Courses Offered in Special Programs

In addition to the regular courses announced above the University offers the following courses especially for students enrolled in the following special programs: Navy Graduate Comptrollership Program, Air Force Advanced Management Program, and Engineering Administration.

114 *Introduction to Statistical Mathematics for Economists* (3)

120 *Principles of Statistical Analysis* (3)

SURGERY

Brian Blades, A.B., M.D., *Professor of Surgery, Executive Officer*
Arch Lockhart Riddick, B.S., M.D., *Clinical Professor of Surgery*
John Gordon Lee, A.B., M.D., C.M., Med. Sc.D., *Adjunct Clinical Professor of Surgery*
Robert Tuthill Gants, B.S., M.D., *Adjunct Clinical Professor of Surgery*
Herbert Hermann Schoenfeld, M.D., *Associate Clinical Professor of Surgery*
Alec Horwitz, M.S., M.D., *Associate Clinical Professor of Surgery*
William Stanley McCune, A.B., M.D., *Associate Clinical Professor of Surgery*
Walter Henry Gerwig, Jr., A.B., M.D., *Associate Clinical Professor of Surgery*
Vincent Michael Iovine, B.S., M.D., *Associate Clinical Professor of Surgery*
Owen Gwathmey, A.B., M.D., *Assistant Professor of Surgery*
Benjamin Franklin Dean, Jr., M.S., M.D., *Assistant Clinical Professor of Surgery*
Carl Berg, M.D., *Assistant Clinical Professor of Orthopedic Surgery*
Calvin Trexler Klopp, A.B., M.D., *Assistant Clinical Professor of Surgery*
Julius Salem Neviaser, A.B., M.D., *Assistant Clinical Professor of Orthopedic Surgery*
Jerome Blaine Harrell, M.D., *Assistant Clinical Professor of Surgery*
Leonard Theodore Peterson, B.S., M.D., *Assistant Clinical Professor of Orthopedic Surgery*
John Pletch Adams, B.S., M.D., *Assistant Clinical Professor of Orthopedic Surgery*
Gordon Sparks Letterman, B.S., M.D., *Assistant Clinical Professor of Surgery*
Richard Knight Thompson, D.D.S., *Associate in Dental Surgery*
William Ross Morris, M.D., *Associate in Surgery*
Jacob Joseph Weinstein, B.S., Phar.G., M.D., *Associate in Surgery*
William Carey Meloy, M.D., M.S. in Med., *Associate in Surgery*
Edward Alexander Cafritz, M.D., *Associate in Surgery*
Karl Hayden Wood, Phar.G., D.D.S., *Associate in Dental Surgery*
Isabella Harrison, A.B., M.D., *Associate in Surgery*
Henry Leon Feffer, A.B., M.D., *Associate in Orthopedic Surgery*
Howard Clemeth Pierpont, A.B., M.D., *Associate in Surgery*
James Richard Thistlethwaite, B.S., M.D., *Associate in Surgery*
Crenshaw Douglas Briggs, B.S., M.D., *Clinical Instructor in Surgery*

Joseph Francis Conlon, D.D.S., *Clinical Instructor in Dental Surgery*
Duane Case Richtmeyer, A.B., M.D., *Clinical Instructor in Surgery*
Leon Gerber, M.D., *Clinical Instructor in Surgery*
Thomas Bradley, A.B., M.D., *Clinical Instructor in Surgery*
Ernest Alva Gould, B.S., M.D., *Clinical Instructor in Surgery*
Austin Bertram Rohrbaugh, Jr., M.D., *Clinical Instructor in Orthopedic Surgery*
Marvin Hayne Kendrick, A.B., M.D., *Clinical Instructor in Surgery*
Brooks Gideon Brown, B.S., M.D., *Clinical Instructor in Surgery*
John Decator Hoyle, B.S., M.D., *Clinical Instructor in Surgery*
Robert Roland Smith, B.S., M.D., *Clinical Instructor in Surgery*
Norman Harry Isaacson, A.B., M.D., *Clinical Instructor in Surgery*
Charles Stanley White, Jr., B.S., M.D., *Clinical Instructor in Surgery*
Dennis Parfrement McCarty, M.D., *Clinical Instructor in Surgery*

101–2 *Surgical Anatomy* — Surgery and Anatomy Staffs

Academic year—1 hour alternate weeks, as arranged.

Clinics illustrating relationship between gross anatomy and clinical surgery. University Hospital.

280 *Introduction to Surgery* — The Staff

Spring—1 hour a week.

Lectures and recitations covering the field of general surgery.

284 *Surgical Physiology* — The Staff

Spring—two hours a week.

A clinical and laboratory course with particular emphasis on applied physiology.

373–74 *Clinical Clerkship I* — The Staff

Academic year—as arranged.

The student is assigned and required to work up thoroughly the cases for diagnosis and treatment. D. C. General Hospital.

375–76 *Outpatient Surgical Clinic* — The Staff

Forty hours as arranged during academic year.

Surgical clinic. D. C. General Hospital.

377–78 *Orthopedics I* — The Staff

Academic year: lecture—1 hour a week; ward rounds—7½ hours a week, in rotation.

D. C. General Hospital.

379–80 *Surgical Staff Conference I* — The Staff

Academic year—Tuesday as arranged.

D. C. General Hospital.

383–84 *Surgical Clinic I* — Blades

Academic year—1 hour a week.

Demonstration of various surgical diseases to the entire class. University Hospital.

473–74 *Clinical Clerkships II* — The Staff

Academic year—in rotation.

Six weeks, University Hospital; three weeks, Mt. Alto Hospital.

479–80 *Surgical Staff Conference II* — The Staff

Academic year—Wednesday as arranged.

University Hospital.

483–84 *Surgical Ward Rounds* — Blades

Academic year—1 hour a week.

Demonstration of various surgical diseases to fourth-year clerks. University Hospital.

491–92 *Surgical Pathology II* — Newman

Academic year: conference—1 hour a week.

493–94 *Surgical Anatomy* — Horwitz and Staff

Academic year: 1 hour a week for twelve weeks in rotation.

Lectures for fourth-year clerks. University Hospital.

497–98 *Surgical Clinic* — Gants and Staff

Academic year—2 hours a week.

Conferences at Walter Reed Hospital for fourth-year clerks assigned to the University Hospital.

UROLOGY

Frederick A. Reuter, M.D., *Professor of Urology, Executive Officer*
Thomas Carlton Thompson, B.S., M.D., *Clinical Professor of Urology*
Edward Egner Ferguson, M.D., *Assistant Clinical Professor of Urology*
Leon Richard Culbertson, B.S., M.D., *Assistant Clinical Professor of Urology*
Gilbert Ottenberg, A.M., M.D., *Associate in Urology*
William Dabney Jarman, B.S., M.D., *Associate in Urology*
Gordon Rhodes MacDonald, B.S., M.D., *Clinical Instructor in Urology*
Herbert DeGrange Wolff, Jr., M.D., *Clinical Instructor in Urology*
Frederick Turner Reuter, M.D., *Clinical Instructor in Urology*

395–96 *Clinics*

The Staff

Clinical teaching and demonstrations on the care of urological cases with special emphasis on the pre- and post-operative management. Operative clinics and clinical teaching. D. C. General Hospital.

491–92 *Urology*

F. A. Reuter and Staff

Academic year—1 hour a week, as arranged.

Lectures covering the entire field of urology including diagnosis, treatment, and morbid pathology.

495–96 *Clinics*

F. A. Reuter and Staff

Three hours a week, in rotation, as arranged during academic year.

Clinical demonstrations, teaching in the Outpatient Department, and urological X-ray conferences, with special attention given to diagnostic procedures. University Hospital.

ZOOLOGY*

Ira Bowers Hansen, Ph.D., *Professor of Zoology, Executive Officer*
Edith Elizabeth Mortensen, Ph.D., *Professor of Zoology*
Kenneth Casper Kates, Ph.D., *Professorial Lecturer in Zoology*
Alton Harold Desmond, Ph.D., *Assistant Professor of Zoology*

Bachelor of Arts or *Bachelor of Science (Columbian College—Field-of-Study*—Prerequisite: the Arts and Letters or the Science curriculum, respectively, in the Junior College, see pages 66–67, including Zoology 1–2.

Required: the general requirements as stated on pages 82–87, and the grade "pass" on the Zoology major examination at the end of the senior year. The correlated knowledge upon which the student will be examined includes the following fields: (1) classification, structure, and ecological relations of animals, both invertebrate and vertebrate; (2) embryological development and life histories of important animal types; (3) general principles of physiology, heredity, and evolution; (4) the development of biological principles, hypotheses, and theories as revealed in the study of the history of zoology.

Master of Arts or *Master of Science in the field of Zoology (Columbian College)*.—Prerequisite: the degree of Bachelor of Arts or Bachelor of Science, respectively, with a major in Zoology at this University, or the equivalent.

Required: the general requirements as stated on pages 89–92.

Doctor of Philosophy (Graduate Council).—See page 98.

First Group

1–2 *Introduction to Zoology* (4–4) Mortensen, Hansen

Academic year: lecture (2 hours)—morning and evening, laboratory (4 hours)—morning, afternoon, and evening; summer 1956.

An introduction to the study of the structure, functions, and relations of animals, and of the fundamental biological principles involved. Material fee, $11 a semester.

41–42 *Comparative Vertebrate Anatomy* (3–3) Desmond

Academic year: lecture (1 hour), laboratory (4 hours)—morning and evening.

Lectures on the organ systems of the vertebrates, laboratory dissections of types. Prerequisite: Zoology 2. Material fee, $11 a semester.

Second Group

101–2 *Invertebrate Zoology* (3–3) Mortensen

Lecture (1 hour), laboratory (4 hours).
1956–57 and alternate years: academic year—evening; 1957–58 and alternate years: academic year—afternoon.

A systematic study of invertebrate forms, including the morphology, classifications, life histories, and phylogenetic relationships. Occasional

* See also the departments of Biology and Botany.

field trips. Prerequisite: Zoology 1–2 or Biology 1–2. Material fee, $8 a semester.

105 *Entomology* (3) Munson

1956–57 and alternate years. Fall: lecture (1 hour), laboratory (4 hours)—evening.

A study of the elementary morphology, physiology, and ecology of insects, with an introduction to the taxonomy of the more important groups. Prerequisite: Zoology 1–2 or the equivalent. Material fee, $8.

138 *Histology* (3) Desmond

Lecture (1 hour), laboratory (4 hours).
1956–57 and alternate years: spring—afternoon; 1957–58 and alternate years: spring—evening.

An introduction to the microscopical anatomy of normal tissues and organs. Prerequisite: Zoology 1–2. Material fee, $11.

145 *Introduction to Vertebrate Embryology* (3) Hansen

Lecture (1 hour), laboratory (4 hours).
1956–57 and alternate years: fall—afternoon; 1957–58 and alternate years: fall—evening; summer 1956.

Origin and early development of the individual, formation of organ systems. Emphasis on the frog, chick, and pig, with reference to the human embryo. Prerequisite: Zoology 2 or the equivalent. Material fee, $11.

152 *Protozoa* (3) Mortensen

1956–57 and alternate years. Spring: lecture (1 hour), laboratory (4 hours)—evening.

Introduction to the protozoa: classification, life histories, and physiology, with special emphasis on free-living types. Prerequisite: Zoology 1. Material fee, $8.

156 *Parasitology* (3) Kates

Not offered 1956–57.

An introduction to the study of animal parasitology, with a survey of parasitic types from protozoa through arthropods. Prerequisite: Zoology 1–2 or the equivalent. Material fee, $11.

162 *Insect Physiology* (3) Munson

1956–57 and alternate years: spring—evening.

Lectures and laboratory work on the physiology of insects. Admission by permission of the instructor. Material fee, $11.

171–72 *Special Problems* (3–3) The Staff

Academic year—as arranged.

Written approval of the instructor is required. Material fee, $11 a semester.

199–200 *Proseminar* (3–3) The Staff

Academic year—morning and evening.

Designed to correlate and supplement the work of Zoology majors.

THIRD GROUP

203 *Seminar in Invertebrate Zoology* (3) Mortensen

Fall—evening.

A study of original publications on hormones of invertebrate animals.

214 *Advanced Invertebrate Zoology* (3) Mortensen

1957–58 and alternate years. Lecture (2 hours), laboratory (2 hours).

Lectures and laboratory work on problems in invertebrate physiology. Prerequisite: Zoology 1 and 101–2 or the equivalent. Material fee, $8.

247–48 *Morphogenesis* (3–3) Hansen

1956–57 and alternate years: academic year—evening.

Lectures and class reports on experimental morphology. Prerequisite: Zoology 41–42 or the equivalent.

251 *Seminar in Vertebrate Zoology* (3) Desmond

Not offered 1956–57.

295–96 *Research* (arr.) The Staff

Academic year—as arranged; summer 1956—Zoology 295 (3).

Investigation of special problems.

299–300 *Thesis* (3–3) The Staff

Academic year—as arranged; summer 1956—Zoology 299 (3).

STUDENT LIFE

STUDENT LIFE

HEALTH ADMINISTRATION

The University maintains a health service that is primarily diagnostic in its intent. For medical emergencies and health consultations there is, on the Campus, a Student Health Clinic open from 9:00 A.M. to 5:00 P.M., with physician and nurse in attendance. There is also a rest room for women, with a graduate nurse in charge.

Medical privileges include: (1) the physical examination of every student entering from secondary school; (2) three visits by the University physician or surgeon, office or residence (District of Columbia) in any one illness, exclusive of a specialist, surgical operation, laboratory, or X-ray examination; (3) hospitalization in the University Hospital for not more than one week during any twelve-month period.

Hospitalization includes board and nursing but does not include special services such as operating room, anesthesia, laboratory, X-ray, or medications. For a statement of the rules governing medical and hospital privileges, see Health Administration, pages 213–14.

LIVING ACCOMMODATIONS

Women Students.—The Hattie M. Strong Residence Hall provides single rooms at $35 a month and double rooms at $30 a month a person. Meals are served at the Student Union. Admission to the University does not include dormitory reservation. A separate application for a room should be made well in advance (for the fall semester by May first, for the spring semester by January first). Forms for application, together with detailed information, may be obtained from the Director of Activities for Women.

Girls under the age of twenty-one who are enrolled for twelve or more semester hours of academic work in the University and who are not living with their parents or relatives may live outside the dormitory only with the permission and approval of the Director of Activities for Women, upon receipt of written requests from parents. In no case will permission be granted for such girls to be domiciled outside the dormitory, except with persons approved by the Director of Activities for Women.

Men Students.—Welling Hall provides double room facilities for 102 students. Rooms rent for $24 a month a person. Dining facilities are available to all residents. Meals are served at the Student Union. Application forms for reservations may be obtained from the Director of Activities for Men.

Information concerning private rooming and boarding facilities near the University for women students twenty-one years of age or older and for men students may be obtained at the Housing Office, Lisner Auditorium, 730 Twenty-First Street, NW. The reservation of rooms in private houses must be made by students.

RELIGIOUS LIFE

The University recognizes the contribution that religion can make to the education of its students by encouraging them to participate in denominational clubs of their own choice. National Catholic, Jewish, and Protestant bodies sponsor these religious organizations, which act as links between the University and the local churches. The Director of the University Chapel and the advisers to the various denominational organizations are available throughout the year for consultation on personal problems.

University Chapel

The University Chapel is maintained as a non-sectarian expression of the faith of the University in the contribution that religion can make to the education of its students. Twenty-minute services are held Wednesday of each week at 12:10 P.M. Representative clergymen of Washington are guest speakers at these non-denominational services.

STUDENT PLACEMENT OFFICE

The Student Placement Office, 2114 G Street NW., provides assistance to students and alumni seeking full- and part-time employment. This office maintains a registry of positions locally and nationally available and refers qualified applicants for consideration. Information is also available on Civil Service examinations.

VOCATIONAL COUNSELING

The University Testing Center is located at 2114 G Street NW. The Center offers educational and vocational testing and counseling service. This office maintains a file of occupational information and training opportunities.

STUDENT UNION

The Student Union, 2125 G Street NW., is the center for student life. From the cafeteria on the first floor to the reading room on the fourth floor, it is well planned to meet the students' need for meals, study, recreation, and activities. In addition to the recreation lounge and

social lounge the Student Union provides office space for the Student Council and for the other major student organizations.

The Student Activities Office, also in the Student Union, has available information concerning the student organizations and campus events.

INTERNATIONAL HOUSE

The International House, 2116 G Street NW., is the social center for students from foreign countries. A series of teas, dances, and other forms of entertainment, and the use of club rooms and lounge enable students to become acquainted and feel at home in the University.

The International Students' Society welcomes as members students from other lands as well as North American students.

The Adviser to Students from Foreign Countries, whose office is in International House, is available for advice and guidance.

STUDENT ACTIVITIES

Directors of Student Activities

The University maintains the offices of the Director of Activities for Men and the Director of Activities for Women, for the guidance of students in all nonacademic phases of student life, such as student activities, social life, and housing. The directors are available for individual counseling concerning personal adjustment to university life.

Student Government

Student Council

The Student Council is responsible to the Director of Activities for Men and the Director of Activities for Women for the conduct of all student activities. Members of the Council are elected annually.

Committee on Student Life

The Committee on Student Life is the judicial branch of the student government. It is composed of not more than seven members of the faculty, two of whom are the Director of Activities for Men and the Director of Activities for Women, appointed by the President of the University, and the following members: President of the Student Council, an Editor of the *Hatchet*, President of Mortar Board, President of Omicron Delta Kappa, President of the Inter-fraternity Council, and President of Panhellenic Council. This Committee has the power to review the acts of all student organizations, including the Student Council, and set aside acts that are contrary to established policy and regulations of the University or the Committee.

Approval of Student Organizations.—This committee is granted au-
thority to approve or disapprove the establishment of any proposed organ-
ization on campus. No student club or society (except social fraternities
sororities, scholastic honor societies, religious or professional clubs o
societies) organized as a branch or affiliate of a non-George Washing-
ton University organization will be recognized by the Committee on Stu-
dent Life.

Eligibility for Student Activities

Any student registered in The George Washington University is
eligible to participate in nonathletic student activities of the University
however, a student having a scholastic average of less than 2.00 is not
eligible to be:

1 A member of the Dance Production groups, Glee Club, Cheer-
leaders, Student Council, Religious Council, Panhellenic Council
Inter-fraternity Council, Student Life Committee, or any publi-
cations staff.
2 An officer, permanent committee chairman, or member of the ex-
ecutive board of any activity.

The rules and policies of the Southern Conference govern participation
in intercollegiate athletics.

The control and administration of all student activities are outlined
in a separate bulletin called "Rules and Regulations Governing Student
Activities".

STUDENT ORGANIZATIONS

Honor Societies

Phi Beta Kappa.—A national honor society recognizing "outstanding
intellectual capacity well employed" in the field of liberal arts and sci-
ences. Senior and junior students who are candidates for the degree of
Bachelor of Arts or Bachelor of Science in Columbian College (in excep-
tional cases, senior and junior students in other non-professional divisions
of the University) and who have shown broad cultural interests, dis-
tinguished scholarly achievement, high character, general promise, and
scholarly ideals may, to a number not exceeding 15 per cent of a class, be
elected to membership by the Faculty members of the Alpha Chapter of
the District of Columbia.

Sigma Xi.—A national scientific honor society, the purpose of which is
to encourage original investigation in science pure and applied. Out-
standing graduate students in the sciences are eligible for full member-
ship, and undergraduates who have shown marked ability in research
may be elected to associate membership.

Alpha Kappa Delta.—A national sociology society.

Alpha Lambda Delta.—A national fraternity established to encourage and reward high scholarship and attainment, membership in which is limited to those freshman women who attain a scholastic average of at least 3.50.

Alpha Omega Alpha.—A national honor medical society.

Alpha Pi Epsilon.—A home economics fraternity.

Arnold Air Society.—A national Air Force ROTC society for advanced cadets.

Artus.—A national economic society.

Delphi.—An intersorority society.

Delta Sigma Rho.—A national forensic society.

Gate and Key.—An interfraternity society.

Iota Sigma Pi.—A national chemical society for women.

Mortar Board.—A national society for senior college women, stressing leadership, scholarship, and service.

Omicron Delta Kappa.—A national fraternity emphasizing leadership in extracurricular activities.

Order of the Coif.—A national legal society, the purpose of which is to foster a spirit of careful study and to mark in a fitting manner those who have attained a high grade of scholarship. Members are elected each year from the highest 10 per cent of the graduating class of the Law School.

Pershing Rifles.—A national Air Force ROTC society for basic cadets.

Phi Epsilon Phi.—A national botany fraternity.

Phi Eta Sigma.—A national fraternity, established to encourage and reward high scholarship and attainment, membership in which is limited to those freshman men who attain a scholastic average of at least 3.50.

Pi Delta Epsilon.—A national collegiate journalism fraternity.

Pi Gamma Mu.—A national social-science society.

Psi Chi.—A national psychology fraternity.

Rho Chi Society.—A national pharmaceutical society.

Sigma Alpha Eta.—A national speech and hearing society.

Sigma Pi Sigma.—A national physics fraternity.

Sigma Tau.—A national engineering fraternity, the purpose of which is to recognize scholarship and professional attainment.

Smith-Reed-Russell Society.—A scholastic society in the School of Medicine. Students of the third and fourth years who maintain a scholastic average of 86 per cent are eligible for associate membership.

Tassels.—A sophomore society.

William Beaumont Medical Society.—A society founded with the object of encouraging and stimulating medical students in work of individual investigation.

Professional Organizations

Alpha Chi Sigma (chemistry), Alpha Kappa Psi (commerce and economics), Alpha Zeta Omega (pharmacy), American Institute of Electrical Engineers—Institute of Radio Engineers (student chapter), American Pharmaceutical Association (student branch), American Society of Civil Engineers (student chapter), American Society of Mechanical Engineers (student chapter), Delta Phi Epsilon (foreign service), Delta Theta Phi (law), Future Teachers of America, Gamma Eta Gamma (law), Kappa Beta Pi (law), Kappa Psi (pharmacy), Nu Beta Epsilon (law), Nu Sigma Nu (medicine), Phi Alpha Delta (law), Phi Chi (medicine), Phi Delta Delta (law), Phi Delta Epsilon (medicine), Phi Delta Gamma (graduate), Phi Delta Kappa (education), Phi Delta Phi (law), Pi Lambda Theta (education), Society for the Advancement of Management (student chapter), Theta Tau (engineering).

Social Fraternities

Sigma Chi, Kappa Sigma, Theta Delta Chi, Phi Sigma Kappa, Sigma Alpha Epsilon, Sigma Phi Epsilon, Phi Alpha, Sigma Nu, Acacia, Tau Kappa Epsilon, Pi Kappa Alpha, Tau Epsilon Phi, Alpha Epsilon Pi, Delta Tau Delta, Kappa Alpha.

Social Sororities

Pi Beta Phi, Chi Omega, Sigma Kappa, Alpha Delta Pi, Delta Zeta, Kappa Delta, Phi Sigma Sigma, Zeta Tau Alpha, Kappa Kappa Gamma, Delta Gamma, Kappa Alpha Theta.

Departmental Clubs

Art Club; Case Club; Chemistry Club; Dance Production Groups I, II, III; El Club Español; Engineers' Council; Enosian Debating Society; Home Economics Club; Howard E. Kane—A.F.A. King Obstetrical Society; Le Cercle Français; Lester F. Ward Sociological Society; Oquassa; Pharmacy Council; Phi Sigma Rho (philosophy); Schoenfeld Verein; Student Bar Association; Charles Clinton Swisher History Club.

Religious Organizations

Baptist Student Union, B'nai B'rith Hillel Foundation, Canterbury Club, Christian Science Organization, Lutheran Student Association, Newman Club, Religious Council, Student Christian Fellowship, Wesley Club, Westminister Foundation.

Musical Organizations

The George Washington University Glee Club, The George Washington University Pep Band.

Student Publications

Amicus Curiae (Law School publication), *The Cherry Tree* (the annual), *The University Hatchet* (weekly newspaper), *The George Washington Law Review*, *Mecheleciv* (engineers' publication), *The Percolator* (pharmaceutical publication).

Other Activities

Alpha Theta Nu (scholarship winners), Big Sisters, Cheerleaders, Colonial Boosters, Fencing Club, Flying Sponsors, Inter-fraternity Council, Inter-fraternity Pledge Council, International Relations Club, International Students' Society, Inter-sorority Athletic Board, Intramural Council, Junior Panhellenic Association, Old Men, Sailing Association, Senior Panhellenic Association, Strong Hall Council, Student Council, The George Washington University Dramatic Activities, Women's Athletic Association, Women's Coordinating Board.

There is a complete program of intramural sports for both men and women.

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THE UNIVERSITY RECORD

SUMMER TERM 1955
FALL AND SPRING SEMESTERS 1955–56

DEGREES CONFERRED

JUNIOR COLLEGE

Associate in Arts

October 15, 1955

Beverly Jane Alexander
Wade Sterling Algee
Iola Meeker Allen
Marlene Eunice Band
Leila Iris Bass n
Jerome Seymour Bernstein
Ruth Ena Berryman
Nora Byerly Bolitta
Charles Thomas Benfield
Beverly Spaulding Borden
Stephen Phelps Bourland
Frances Bran
Suzanne Carole Bregman
(With distinction)
Marvin Joel Brown
(With distinction)
Dorothy Louise Burri
Margaret Graham Busick
(With distinction)
Donald Bruce Callander
Margaret Mary Chamberlain
Willard Caradine Clopton, Jr.
(With distinction)
Allan Barry Cohen
Stanley Cohen
Joan Lee Cousins
Carolyn Allison Cowdin
Elizabeth Warner Cubberley
Josephine Ann Curran
John Joseph Daly
William Christian Dana
Thomas Garter Destrick
Leonard Joseph DeMino
Sharon Louise Doran
Paul Kenneth Downing
James Kenneth Draper
James William Dudley
Mary Joan Duke
John Edward Duncan
Helyn Doris Eagle
Eileen Jo Edgren
Philip Eisenberg
Florence Ethel Ekman
(With distinction)
Vernon David Elder
David Allen Ellis
Jonia Ann Emory
(With distinction)
Patricia Shreve Evans
Sheldon Feldman
Theodore Martin Fields
Donald Vincent Fisher
Edward Hogue Funston III
Edward Lamar Gatewood
Frederick William Gibb, Jr.
Richard Porter Giesler
Eugene Richard Gilmartin, Jr.

D.C.
Calif.
Va.
D.C.
D.C.
D.C.
D.C.
Va.
Calif.
D.C.
D.C.
D.C.

Ind.

Va.
Pa.

Minn.
D.C.
D.C.

D.C.
Md.
D.C.
Wis.
D.C.
Md.
Md.
D.C.
W.Va.
Calif.
D.C.
D.C.

D.C.
Md.
D.C.

Kans.
D.C.
Va.
Ohio
Va.

Julius Morton Goodman
(With distinction)
Richard Ralph Grover
Audrey Doney Hall
(With distinction)
Rosalind Hank
(With distinction)
James Bailey Henkin
Marilyn Hiltabidle
Jesse Oscar Hinshaw, Jr.
Robert B. Holderness
Elizabeth Margaret Hughes
(With distinction)
Neal Loretto Hyatt
John Archibald Jack
Bebe Audrey Jacobson
Patricia Anne Johnson
Llewdell Jones
Stephen Ralph Judge
Andrew Charles Kaley, Jr.
Stanley Edward Kanasik
Albert Gerald Kaufman
Alan Kay
Maryalice Claire Kelliher
Constance Anne Kelly
James Edward Kelly
Van Angello Keriakos
Stanley Allan Koch
Clair Bette Kolonia
Frank William Kovacs
Myron Leonard Lenkam
Helene Nancy Lesser
Eleanor Ann Linn
Ellen Frances Littlepage
Nancy Genevieve Lloyd
Kathryn Teresa Louka
Mary Ellen Luxens
James Edward Manning
Ruth Marshall
Robert Simon Mark
Mary Henry M. Aulay
Chisolm Clifford McAvoy
John Thomas McLaughlin
Bruce Stephen Mencher
William Lee Messick
Jeannetta Woodley Monroe
Paul Bryan Monroe, Jr.
(With distinction)
Walter Albert Morgan
Kenneth Chester Nelson
William Ross Newland
Mary Ann Nicholls
Otto Cecil Norman, Jr.
Charles Edward Olliatt, Jr.
James Herbert O'Mara
Jerry Howard Opsack
Mary Lloyd Packard

D.C.
D.C.
D.C.
Md.
D.C.
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Pa.
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Md.
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Mass.
Va.
Mass.
D.C.
Mass.
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D.C.
Conn.
D.C.
Pa.
N.J.
Texas
D.C.
Mass.
Va.
D.C.
Wis.
D.C.
Va.
D.C.
Pa.

Kenneth John Painter	Md.	Roger Earl Spitzer
Charles Selden Peckham	D.C.	(With distinction)
A. Jay Peikin	D.C.	Patricia Ann Stapelu
Elliott Perlin	D.C.	Maeve Frederica Sterling
(With distinction)		Ronald Leroy Stevenson
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Loren Bond Powell	Iowa	Robert Lawrence Sweeney
Anna May T. Prince	D.C.	John Smith Thach, Jr.
Herbert Roy Rappaport	N.Y.	Dale Mortensen Thatcher
James Henry Rempe	Md.	(With distinction)
(With distinction)		Jov Lee Tiedman
Ralph Linn Richardson	Md.	Harold Lee Toothman
Harold Edwin Runde	N.Y.	Donald Joseph Tubridy
Audry Mae Ross	Calif.	James Chase Tyler II
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Mary Manfred Schiffman	D.C.	Janet R. Vreeland
Dermot Joseph Schmeck	Va.	Richard Malcolm Walker
George Arent Schmeck	Va.	Stanley Wahrman
Harold Sidney Schneeberg	D.C.	William Milton Weaver
Irene Melitta Schuler	Va.	Aurelia Goldie Weiss
Joan Frances Semans	Md.	Jay William Weiss
Lila Sarah Shapiro	Va.	Paul Hesse Welch
Catherine Mary Shelton	D.C.	Donald Phillip Whitworth, Jr.
Ernest Rainey Shiller	Md.	Patricia Holmes Wideman
Mary Sandra Shoemaker	Md.	Ann Morgan Williams
(With distinction)		Percy H. Willson II
Anthony Pierce Shupe	D.C.	Walter Scott Wingo
Richard Smith	Mass.	Herbert Maurice Wolf
Stevens Solomon	D.C.	Bertram Zumoff
Lawrence William Spellman	Md.	

February 22, 1956

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Donald Theodore Amblod	D.C.	Harold Sherrick Harwood, Jr.
Helen Anderson	D.C.	Dorothy Hazen Heidenthal
Robert James Anstead	D.C.	James Anderson Heltzer
Dimitrios Arthur Argyropoulos	Greece	Carole Ann Howard
Jane Ellyn Arny	Va.	Henry Fred Jonuff
Theodore Lampis Baroody	N.H.	Jesse Albert Kaser
Elizabeth Shull Beasley	D.C.	Julius Matthew Kheiro
John Vass Gibson Beatty	Va.	David Armstrong Kosiv
Marvin Bernard	Va.	Arpsie Elizabeth Kurkorian
Robert Julian Bowen	D.C.	George Kuo-Chi Liang
Jeannette Virginia Breden	Va.	Irwin Hersch Lipez
Dulcey Ann Brown	Va.	Solomon Louis Margolis
William Bingham Brown III	D.C.	Alan Norman Marks
Louis Frank Buzzas	Md.	Thomas Jose McCleary
John Vincent Canfield	D.C.	John Joseph McCormick, Jr.
Anna Joyce Capps	D.C.	Marilyn Mendelsohn
Nadine Olive Casey	N.J.	Alan Donald Mitchell
Ray Edmund Carver	S.C.	(With distinction)
James Harold Clark	Va.	Doris Metzger Moller
William Cyrus Clarke, Jr.	D.C.	Marilyn Ray Mook
Calvert Hall Clogenpeel	Va.	Sanford Sterling Munro, Jr.
Lois Collette	Md.	Richard Harold Nelson
Alison Bronson Coolick	Va.	Elizabeth Sutherland Newman
Edward Gerald Cooperamith	D.C.	(With distinction)
Edmund Burke Crump	D.C.	Patricia D. Cottrell
Georgia Rose D'Amicol	Pa.	Frank Ralph Pesotta
George Dimm	Pa.	Catherine Ann Pendleton
Lenna Pasquale DiPietro	Md.	Library Jeannette Petersen
William Lee Elser, Jr.	Va.	Ralf Georg Poecker
William Joseph Fraser	D.C.	Warren Clayton Poe
Clarice Rose Fulton	Ill.	Donald Lee Prichard
Charles Sidney Forbes, Jr.	D.C.	Darrel Redd
Susan Rosalie Gardner	D.C.	Irwin Reisman
Robert William Goodwin	N.Y.	James Riddle
Charlotte Matilda Gustafson	D.C.	James Edgar Roberson

Alice Marie Rooks			
Liliosa Mata Ross	D.C.	James Aubrey Summers, Jr.	D.C.
Natan Lee Rucker	D.C.	Frances Sue Tatum	D.C.
Rita Marie Ryan	Va.	Ida Marie Teasedle	D.C.
Robert Morton Sandler	N.Y.	Mariam Florence Thompson	Pa.
Angel Dante Santos	D.C.	Bernhard Rainer Tittmann	Va.
Mary Elizabeth Shea	D.C.	(With distinction)	
Robert Joseph Sheaba	Conn.	Erwin Abraham Tomaschoff	Israel
Herbert Bertram Siever	N.J.	(With distinction)	
Barbara Irene Smith	Ga.	Robert Henry Tourtellotte	Md.
Thomas Eliard Smith	D.C.	Rosey Wickersham Turner	D.C.
Gertrude Brothers Stevenson	D.C.	Jon Edward Updike	D.C.
Pearl Branick Stewart	D.C.	Louis Lee Vernier	D.C.
Judith Irene Stimpson	Md.	Lucy Needham Welsh	Va.
Robert Lee Sturm	D.C.	Sherrie Margery West	D.C.
	Okla.	Peter Wright	Va.

June 6, 1956

Melvin Abramovitz	Md.	Grant Campbell Edwards	D.C.
Helen Mores Anderson	Minn.	Nathan Elkins	W.Va.
Roscoe Bryant Arnold	Md.	Jerry Deem Elliott	D.C.
Forrest Symington Averbach	Md.	Mary Louise Engel	D.C.
Anne Cornelia Bageant	D.C.	(With distinction)	
Carol Lee Baker	Va.	Robert Joseph Erskine	Maine
Leo Bellizzi	D.C.	Barbara Jean Esthimer	Va.
James Joseph Babkevich	N.H.	(With distinction)	
Warren Ford Barley	D.C.	James Paul Evans	Va.
Deanna Bass	D.C.	Robert Francis Fennell	Va.
Nancy Brandford Bealle	D.C.	Richard Arthur Finda	D.C.
Dolores Nancy Bedford	Md.	(With distinction)	
Alan Burton Berger	D.C.	Patricia Ann Fisher	Va.
Christine Elizabeth Bishop	Mass.	Alan Donald Fishman	D.C.
Claude Edward Bonbrest	D.C.	Helen Annie Flinck	Pa.
Dorothy Zelia Brewer	D.C.	Carolyn Frances French	D.C.
Donald Read Bridges	Md.	Peter Alexander Fried	D.C.
Barbara Sue Brosser	D.C.	Joel Friedman	Va.
Michael Edward Brown	D.C.	Curtis Lee Funkhouser	Va.
William G. Brown	D.C.	Raymond Garcia	Md.
Julie Ann Cactus	D.C.	Richard Joseph Gaspari	Pa.
John Caldwell	D.C.	Richard Arthur Gay	Md.
Constance Joan Campbell	D.C.	Donald Elliott Geesler	D.C.
Donald Allen Campbell, Sr.	Va.	James William Gladden, Jr.	Va.
Neil Logan Carroll, Jr.	Idaho	Eileen F. Glass	Va.
Donald Overton Casteel	D.C.	Jerome Arthur Goldenberg	Va.
(With distinction)	Md.	Yetta Goldman	Md.
Terrell R. Chamberlain		Frances Zenith Goldstein	D.C.
Rose Ann Chandler	Va.	Bernard Arthur Goodrich	Md.
William George Chernek	D.C.	Harry Cass Gordon	D.C.
Mary Carlos Church	Mass.	Alice Irene Gradkowski	Pa.
Arthur James Cowan	Va.	Rosemary Brown Greene, Jr.	D.C.
William Frederick Costolo	Va.	Marion Ruth Greenman	D.C.
Alphonse Paul Covey	Va.	Justin Barbara Gutterman	D.C.
Ruth Hubbard Cousins	Mass.	Thomas Milner Hall, Jr.	D.C.
Howard Irvin Crawford	Va.	Patrick Francis Hanley	N.J.
Carmen Walter Crosadell	Iowa	Bernard Alvin Hankman	Md.
John Thomas Crouse	Va.	Joan Marie Hellner	D.C.
Barbara Ann Carvey	Va.	Edward Murray Heflin	Md.
Kenneth Edward Curtis	Va.	Donald Hines Herring	D.C.
Charles Dennis Daily, Jr.	D.C.	Frank Leonard Hickisch, Jr.	Va.
Warren Darrow	Md.	William M. Hinchey	Va.
Clement Aster Davidov	D.C.	Jessie Frances Hinge	D.C.
Valerie Dearden	D.C.	Mary Elizabeth Hoffman	Pa.
Susan Carmina de Silva	Va.	(With distinction)	D.C.
Lloyd Richard Dillie	Md.	Harold Herbert Holland	
Philip Louis Dobsak	D.C.	Frank Jesse Holmes	Va.
Paul Grosvenor Douglas	D.C.	Joseph Charles Horenstein	Md.
(With distinction)	D.C.	Eugene Gary Horning	D.C.
Charles Lowell Downs		(With distinction)	D.C.
Vincent Joseph Doyle	Ill.	Ruth Anne Irwin	
Joan Hunter Drew	Pa.	Joseph Duncan Johnson	Pa.
Edward Caton Duncan, Jr.	D.C.	Aubrey Bennett Jones, Jr.	Va.
	Va.		Md.

Gael Annette Jones	Md.
Michael G. Kammen (With distinction)	D.C.
Bruce Neal Kamnee	D.C.
Gabriel Kavadias	D.C.
Dan Peck Kessler	W Va.
Jessie Kockler	Va.
Irena Aldona Krivickas	D.C.
Eleanore Rose Kroner	D.C.
Gerald Saul Landau	D.C.
Herman Alfredo Laso	D.C.
Ronald Gordon Latimer	Md.
John Lavagnino	N.J.
Mildred Jane Layton	Va.
Jennie Helen Lazowski (With distinction)	Mass.
Joseph John Lesevicius	Conn.
Marvin Levy	D.C.
Myra Little	D.C.
Barbara Vivian Lopatin	D.C.
Ronald Alan Lubman	Md.
Robert James Luce	D.C.
David Lawrence Luebke	Wis.
J. Warren Lytle	Md.
Lucyle Harrod Mace	Va.
David Marcus	Pa.
Joyce Marilyn Marcus	D.C.
Christopher Gilbert Mares	Va.
Juliet Carpenter Martin III	D.C.
Ruth Edith McAfee	D.C.
Johnnie Edward McLane	Va.
William Antonio Medina	Md.
Barton Paul Meyers	D.C.
Paul Frank Meyers, Jr.	Md.
Jack Wessel Miller	D.C.
Marvin Jay Miller (With distinction)	Va.
Allan Barnett Minster	D.C.
Allen Mendel Mondlak (With distinction)	D.C.
James Reardon Moore, Jr.	Va.
Marjorie Wright Moore	Va.
Robert Hugh Moore	Va.
Thomas Gale Moore (With distinction)	Md.
Robert Hosley Mason	Mass.
Patricia Ann Neighbarger	D.C.
Arthur Ramond Neira	Va.
Lawrence Sterling Nordorfer	D.C.
Joseph Page Nudelman	Md.
Viola Eleanor Niemi	Mich.
Helen Stone Niles	Md.
Rosario Christopher Nissi	D.C.
Paul E. R. Noordpeter, Jr.	Va.
Nicholas Stephen Nunzio (With distinction)	D.C.
Robert Fisher Olson	D.C.
Phyllis Marie Oriel	Va.
Frank Papp, Jr.	N.Y.
Richard Gerald Parker	Md.
David Mermod Parkins (With distinction)	D.C.
Johanna Maria Peters	D.C.
Margaret Jean Plaudon	D.C.
Thomas Joseph Pierpoint	Va.
Sigmund Richard Pincus (With distinction)	D.C.
Lincoln Antoine Poupore	
Frances Barbara Press (With distinction)	
John Lynwood Ramey	
James Bertrand Ramsay	
Vernon Elmer Rand	
Loretta Mae Reeves	
Jerry Michael Reinsdorf (With distinction)	
S. Jesse Reuben	
Henri Adrien Richardson	
Manuel Joseph Rios	
Marie Magdalen Ritz	
John Albert Rixse	
Earl James Robb	
Doris May Rosenberg	
Leah Edith Ross	
Mary Carolyn Rowe	
Robert Barnes Sampson	
John Joseph Schultz	
Richard Alexander Schwartz	
Mary Shaw Scott	
Donald Henry Sebade	
Sandra Angela Eve Seymour	
Leon Gilbert Sheer	
Stanley Irwin Sherr	
Neil Marcus Shpritz	
James Southern Shreve	
Marvin Victor Simon (With distinction)	
Helen Frances Skopic	
Adabelle Smith	
Earl Clarence Smith, Jr.	
Fukuko Koizumi Smith	
Richard Stirling Souther	
Henry Southworth	
Carole Ruth Spitzer	
Barbara Hinton Stewart	
Peggy Ann Stubbs	
Barbara Jane Suse	
Robert Gerald Sutton	
Anna Margaret Szymczak	
Patricia Anne Theisz	
Myles Paul Thompson, Jr.	
Sandralee Edlen Thompson	
Valery Thornton	
Ann Constantine Tompros	
Loretta Anna Tonelli	
William Robert Travers	
Ethel Gisela Tucker	
Conrad Gravier Tuohey	
William Vernon Van Fleet (With distinction)	
Michael Vasil	
Derek Von Roemer (With distinction)	
Elizabeth Lynn Weber	
Dorothy Mae Wilborn	
Mary Elizabeth Williams	
Carol Wilma Wilson	
Judson J. Wines	
Doris Estes Woolley	

COLUMBIAN COLLEGE

Bachelor of Arts

October 14, 1955

Elizabeth Ann Belton		
Dana Gloucester Boutland	D.C.	Joseph Francisco
Charles Vincent Cestnap	D.C.	Stanley Howard Perry
James Gaston Davis	Md.	Lowell Lewis Pinkston
Patricia Carolyn Gray	D.C.	Donovan Arthur Pooley
Margaret Mount Grover	Va.	(With distinction—Special honors in History)
John Robert Hoover	D.C.	
Doris Ann Kenny	Pa.	Leland Austin Pyle
Bernard Clement Kovach	Md.	Claudia Patricia Ragan
Norma Rowland Kratz	Pa.	Rose Harris Regine
William Lewis MacCracken	Va.	Robert Edwin Ryan
Aphrodite Marotsos	Va.	Israel Schechter
(With distinction)	D.C.	Harvey B. Strasberg
Robert Marston		Walter James Stuart, Jr.
Mary Lane Marshall	D.C.	Ida Sawyer Hunt
Margaret Mathewson Merriman	D.C.	John Watson Thorne III
(With distinction)		Guillermo Lopez Urrutia
Charles Oscar Mongrue	Md.	Eugene Hermann Wilson
Howard Mott	Mich.	Charles Mortimer Wyman

February 22, 1956

Phyllis Johnson Allen	Va.	John Reed Hodges
Leo Eugene Anderson	Mass.	Barbara Lynch Hubbard
Alma Arvine Arms	Ohio	Lamar Williams Jefferson, Jr.
George Kenneth Austin	N.J.	Robert Ingersoll Lambert
Marilee Lewis Bregman	D.C.	John Gentry Lawson, Jr.
Donald Alden Burk	D.C.	James Ralph McNeal
Claire Louise Burns	Md.	Josephine Mason Meers
Eleanor Lenore Byrd	D.C.	Judith Mary Morse
Paul Joseph Coller	Ohio	Hugh Lucius Newell
(Special honors in Journalism)		Eugene Edward Nowinski
Frank Cummings	Md.	Isabelle Lawrence Perkins
Virginia Nancy Dalbell	D.C.	Charles Albert Perry
John Griffin Davis	D.C.	Eva Ramsey
Richard Dwyer	D.C.	(With distinction)
(With distinction)		LaVerne Helen Richardson
Dena Lewis Dwyer	Minn.	James Stevens
Patricia Steere Evans	Md.	Antonio Gilbert Stewart
Arthur Lasher Freeman	Va.	B.S. in Ed. 1952, Wilson Teachers College
Neal Leonard Fuhrer	N.Y.	(Cum laude)
David Mead Gordon	D.C.	Clarence Lee Tipton
Ethel Mercantine Gresham	Colo.	William Jennings Trittipoe
Ronald D. Haggart	D.C.	

June 6, 1956

Albert Frederick Abraham	Va.	John Dare Blanchard
Nancy Lalos Allgaier	D.C.	Bernice Mossman Block
Gerda Otten Apel	D.C.	Richard Jean Bourcier
William Prescott Atchison	D.C.	Laura Mercedes Burger
Hala A. Baer	Iraq	(With distinction—Special honors in Religion)
Arnold Benjamin Barr	D.C.	
(With distinction)		Nora Mae Thompson Burst
Leila Iris Basden	D.C.	Florence Romaine Bucka
Walter Lawrence Baumann	D.C.	Patricia Michele Burke
(With distinction)		Robert Emery Burns
Joseph Hartley Bell II	Va.	Joan Kathryn Cassidy
Esther Marina Beerso	Md.	George Emmett Chewning
Ruth Ives Berryman	D.C.	Carol Pendleton Clarkson
Anne Seal Blake	Va.	Elizabeth Hope Coleman
William Roberts Blake	D.C.	Paul Matthew Coleman

Anna Mead Cornwell — Va.
Louis Joseph D'Amico — Ohio
Edward Harry Dorsey — Va.
Elizabeth Anne Day — Md.
Ruth Dickerson — D.C.
Linda Woodruff Draper — Fla.
Florence Georgia Wright Dunn — D.C.
Adrienne Clare East — Va.
Sadie Ellen Edmonds — Va.
Donald Clifford Ewing — D.C.
Orin Samuel Ewen — Va.
Diane Engelman Epstein — D.C.
(With distinction—Special honors in Speech)
Fred Wareham Fisher — Va.
Aldo Fortunato — Va.
Daniel Tobias Franklin — D.C.
Margaret Lemon Frawley — D.C.
Joyce Louise Freedman — D.C.
Fred Freedman — Md.
Bernard James Fritz — Md.
Andrew John Gabor — D.C.
James Frederick Gallagher — D.C.
Sylvia Ruth Garvin — D.C.
Barbara Helene Gertler — D.C.
Herbert Joseph Goldenhorn — D.C.
Bodil Hadrup Gilliam — Denmark
Ann Agatha Grace — D.C.
Caroline Gramlich Greene — Va.
Frances Marble Haines — Md.
(With distinction)
Mary Halow — Md.
Muriel Beton Handmaker — Ky.
Susan Haynes Harper — D.C.
William Rosque Harper — D.C.
James Faulkner Henry — W.Va.
Jo Ann Henry — D.C.
(With distinction)
Monte Arnold Herman — D.C.
Thomas Herbert Hughes — S.C.
Harrison Lee Humphrey — Va.
Ward Bedford Hurlburt — D.C.
Algernon Wilmer Jackson — Va.
Joel Mendelsohn Janes — Fla.
Henry Bernice Jenkins — Va.
Frances Caroline Jernigan — D.C.
Barbara Sue Johnson — Va.
Patricia Anne Johnson — Va.
Mary Jolly — D.C.
(With distinction)
Julie Marilyn James — Md.
(With distinction)
Michael Thomas Kastanek — Md.
Marilyn Faye Kettler — D.C.
Samuel Jay Keyser — D.C.
(With distinction—Special honors in English)
Ethel Virginia Anne King — Md.
(With distinction)
Roma Diane Knee — Md.
Dorothy Helen Koessler — D.C.
(With distinction)
Eva Maria Koranowsky — D.C.
Francis Edward Lane — Md.
Linda McKay Learnard — D.C.
Joan Lee — Va.
Joan Ellen Lief — N.Y.
Jack Christopher Loadman — D.C.
Oswaldo Castro Lobo — Brazil
Joseph Hector MacNeil — Va.
Susan Chaffin Manzano — Md.
Harry Marfut — D.C.
Linda Marjorie Marmelstein — Pa.
William Alfred McClellan — Md.
John Alexander McClure — Va.
John Thomas McLaughlin — Pa.
Mary MacMillan McLaughlin — D.C.
Norman Lowell Merkler — D.C.
Georgiana Kay Merriam — N.Y.
Lewis Arthur Meyers — N.J.
Sara Jane Miller — Md.
Hetty Lee Mitchell — D.C.
Margaret Moncrief — D.C.
Bobbie Ruth Moore — Md.
Kyra Barbara Mosel — D.C.
Ann Tsuneko Murayama — D.C.
Randolph Clay Murphey III — Md.
Sandra Lee Myers — Md.
Margaret Jane Nichols — Tenn.
Robert Browning Nicodemus — Md.
Nita Fay Nowlan — Va.
Patricia O'Connell — Md.
Thomas Francis O'Connell — Md.
Patricia Alison Ruby O'Neil — Va.
Ronald I. Otterberg — Md.
William Harry Palm — Va.
Priscilla Taylor Palmer — Va.
Mary Leona Paulson — Va.
James Tomlinson Peacock — Va.
William Houston Peiter — Va.
Kent Albrecht Peterson — Va.
Carol Landis Pitson — Va.
Fredric Carl Porton — Va.
Wenda Dubb Reiskin — Md.
James Edwin Reynolds — Md.
Mary Charles Reynolds — Md.
Sally Anne Ricci — Md.
Gertrude Bruce Rice — Md.
John Albert Rague — Md.
Melvin Chester Roane — Md.
Michael Katchine Roof — Md.
John Ross — Kans.
Wouter Roeland Scheltema — Md.
Earlene Joy Sebaugh — Md.
Elizabeth Booth Silver — Md.
Richard Joseph Sincoff — Pa.
French Crawford Smith — Md.
Richard Leon Smith — Md.
Agatha Strates Stephanides — D.C.
Maeve Frederica Sterling — D.C.
Barbara Lynn Stuart — Md.
(With distinction—Special honors in Journalism)
Ko Flory Suzuki — Japan
Robert Owen Swenarton — Md.
(With distinction—Special honors in Journalism)
Patricia Anne Taylor — Md.
Nancy Elizabeth Tyson — Md.
David Allan Ulrich — Md.
Dorothy Louise Vaill — Va.
(Special Honors in Speech)
Robert Means Van Horn — Md.
Richard Malcolm Walker — D.C.
Anna Levin Weinseb — D.C.
Jane Ann Whittemore — D.C.
Rosa Dahl Wiener — Va.
Paula Margryn Williams — N.Y.
Gilda Joyce Winegard — D.C.
(With distinction)
Rita Anne Witkin — N.Y.
Herbert Maurice Wolf — D.C.
Robert Lee Wyener — D.C.

Bachelor of Science

October 15, 1955

Ruben Altman
Murray Frederic Hammerman
Webster Chadwick Leyshon

Va.	Samuel Sheridan Matthews	Va.
D.C.	Helen Collin Rathbone	D.C.
Md.	Joseph Francis Worley	D.C.

February 22, 1956

Clifford Adelbert Hewitt
Ph.G. 1937, Columbia University
Ligita Novikovs

Va.	Salvador O'Neill	Puerto Rico
Md.	Raymond Charles Surgen	Md.

June 6, 1956

Lucille Alberta Anstine
Geraldine Ramona Ashour
Charles Robert Blair
Russel Manoogian Dudley
Archibald Gartrell, Jr.
Robert Stuart Goodman
Edward Motsatsenki
Hugh Vincent O'Neill

Pa.	Maya Paabo	D.C.
Md.	Stanley Powell	Md.
Va.	Eugene Lowell Rae	Va.
D.C.	Maria Sylvia Sollazzi	Md.
Md.	Larry Bernard Silver	D.C.
D.C.	Marilyn Lenore Stamper	Md.
Mich.	Howard Wallace Stenger	D.C.
D.C.	Harold Stanley Watkins	Md.

Master of Arts

October 15, 1955

Mildred Cassandra Gault
A.B. 1946, Converse College
Warren Gould
A.B. 1951, The George Washington University
Glenn Lewis Hall
A.B. 1947, Lebanon Valley College
Lois Webster Levy
A.B. 1949, Radcliffe College
John Wallace McDonald
B.S. 1915, University of Kentucky
William Thomas McQuaide
A.B. 1937, Emory and Henry College

D.C.	David Lewis Moore A.B. 1948, Harvard University LL.B. 1952, The George Washington University	D.C.
Va.	Frank Lowery Taylor A.B. 1938, Mercer University	Ga.
Pa.	Jane Clay Tucker A.B. 1933, Mary Baldwin College	W. Va.
Md.	Joseph Augustus Vaughan A.B. 1934, The George Washington University	Mexico
Va.	Patty Thomas White B.S. 1948, Georgetown University	Ala.
Va.	Helen Overton Williams Washington A.B. 1949, Barnard College	Md.

February 22, 1956

Loretta Boissonneault
A.B. 1954, The George Washington University
Joseph Philip Bossy
A.B. 1951, Dartmouth College
Edward Watters Collier
B.S. 1950, University of Maryland
Harold Leonard Emerson
A.B. 1953, The George Washington University
Edmund Joseph Gerhard
A.B. 1955, The George Washington University
Herbert Gewertz
B.S. 1954, College of the City of New York
Cornelia Hopewell Gregory
A.B. 1942, Smith College

Canada	Gertrude Marion Hargett A.B. 1949, The George Washington University	D.C.
N.Y.	Brian Joseph Hessler A.B. 1951, University of Maryland	Md.
Va.	James William Lawson A.B. 1941, The George Washington University	D.C.
Va.	Melvin James Kelley A.B. 1950, University of North Carolina	Ind.
	Patricia Louise Maguire A.B. 1950, Barnard College	D.C.
N.Y.	Constance Leverson Mortimer A.B. 1948, The George Washington University	Md.
Va.	Aram Zakarian A.B. 1952, The George Washington University	R.I.

June 6, 1956

Paul Burns — D.C.
A.B. 1940, The George Washington University

William Evans Calhoun — Va.
A.B. 1[illegible], Hampden-Sydney College
B.D. 1[illegible], Eastern Baptist Theological Seminary

Vera Louise Colbry — Md.
B.S. 1951, Oregon State College

Andrew Reed Fennimore — Md.
A.B. 1[illegible], University of Maryland

Harvey Nelson Fortune, Jr. — Va.
A.B. 1[illegible], The George Washington University

John Shearer Hertzberg — N.Y.
A.B. 1949, Hebrew College

[illegible] — Md.
Pauline Kartalos
A.B. 1947, University of Vermont

Va.
Gladys Gertrude Leech
A.B. 1954, The George Washington University

[illegible]
Priscilla Levy Levinson — D.C.
A.B. 1948, Hunter College

Russell Ward Millar, Jr. — D.C.
A.B. 1[illegible], University of California

[illegible] — Va.
Douglas Morton Schimmel
A.B. 1[illegible], Lake Forest College

Edward Penn Stafford — D.C.
A.B. 1947, Dartmouth College

Helen Anne Vigness
A.B. 1951, The George Washington University

Master of Science

October 15, 1955

Aaron Elliott Freeman — D.C.
A.B. in Ed. 1[illegible], The George Washington University

Charles Rutland Gamble — D.C.
B.S. 1[illegible], Waynesburg College

Morton Goodman — Md.
A.B. 1[illegible], University of California at Los Angeles

[illegible] — Va.
Edward Samuel Kline
A.B. 1948, University of Pennsylvania

D.C.
Robert Edger McCoskey
B.S. 1950, The George Washington University

[illegible] — Calif.
John William Oberholtzer
A.B. 1940, Earlham College

February 22, 1956

Lee Roy Brown, Jr. — Ohio
B.S. 1[illegible], University of Alabama

Mary Clair Fitzsimmons — D.C.
B.S. 1949, The George Washington University

Joseph Wesley Gentry — Va.
A.B. 1[illegible], University of North Carolina

William Donald Hayes — D.C.
B.S. 1[illegible], Wilson Teachers College

Simon Hendrawsky — D.C.
A.B. 1[illegible], Brooklyn College

Joseph Kenneth Ivester — N.C.
B.S. 1[illegible], Davidson College

Nick Karavasilis — D.C.
B.S. 1954, The George Washington University

O'Dean Leonard Kurtz — Md.
B.S. 1[illegible], Iowa State College

Puerto Rico
Luis Raul Otero-Vilardebó
B.S. 1954, The George Washington University

Md.
Jiro Oyama
B.S. 1949, Northwestern University

Israel
Isreal Posner
B.S. 1955, The George Washington University

Md.
James Henry Rust, Jr.
B.S. 1954, Franklin and Marshall College

D.C.
Walter Allen Shropshire, Jr.
B.S. 1954, The George Washington University

N.Y.
Vincent Gerald Zannoni
B.S. 1951, College of the City of New York

June 6, 1956

Jack R. Ertel — D.C.
B.S. 1[illegible], University of Pittsburgh

Ina Ann Faust — D.C.
B.S. 1954, The George Washington University

John Alfred Gagnon — Mass.
B.S. 1[illegible], Arnold College

Emanuel Hellmann — Md.
B.S. 1[illegible], College of the City of New York

D.C.
David Icenhower
B.S. 1953, The George Washington University

Md.
Joseph James Kleinstuber
B.S. 1954, Georgetown University

Fla.
John Joseph McGann, Jr.
B.S. 1941, Queens College of the City of New York

Md.
Norward Archibald Meador
B.S. 1934, Virginia Military Institute

Stanley Correll Nagle, Jr. — Md.
B.S. 1950, Dickinson College

Alia Hassan Raad — D.C.
A.B. 1954, University of Utah

Preston Charles Rogers, Jr. — Md.
A.B. 1949, Johns Hopkins University

Robert Gordon St. Clair — Md.
B.S. 1954, The George Washington University

Paul Claiborne Sherertz — D.C.
B.S. 1943, Duke University

Frederick Clayton Thiede — Md.
A.B. 1951, Western Michigan College

THE SCHOOL OF MEDICINE

Doctor of Medicine

June 6, 1956

Donald Kinnear Anderson — Ohio
A.B. 1952, Yale University

John Bernarr Auerbach — Pa.

James Albert Austin — Ariz.
A.B. 1952, University of Southern California

Bruce Cramer Banning — Md.
B.S. 1952, Georgetown University

Jack Lee Barga — Ohio

Frank Thomas Barranco — Md.
A.B. 1952, Duke University

Theodore Fisher Blackwelder — Md.
B.S. 1952, Roanoke College

Roger Boles — Calif.
(With distinction)
A.B. 1949, Stanford University

Charles Harmon Brown — Fla.
A.B. 1952, Lafayette College

Margaret Lambert Brown — Va.
A.B. 1951, The George Washington University

Paul Earle Carlson — Calif.
(With distinction)
A.B. 1951, Stanford University

Albert Cleteboe — Pa.
A.B. 1952, Washington and Jefferson College

Emmett Monroe Cooper — Va.

Maurice Clyde Cowish — Calif.
(With distinction)

Henry Warren Dasford — Ill.
A.B. 1950, Yankton College

Neilson Thomas Debevoise — Va.
(With distinction)

Oshin Der Stepanian — Iran
A.B. 1952, Harvard University

Harvey Jennings De Witt — Calif.

Dorothy Skene Dobbs — Md.
B.S. 1948, Duke University
M.S. 1950, Emory University

Oscar Irving Dodek, Jr. — D.C.
(With distinction)
A.B. 1956, University of Michigan

John Thomas Domann — Wis.
B.S. 1951, University of Wisconsin

Lawrence Joseph Eanet — D.C.
(With distinction)
A.B. 1952, Harvard University

William Richard Egbert — Idaho
B.S. 1952, Brigham Young University

William Thomas Ellington — N.C.
A.B. 1952, Duke University

George Joseph Ellis, Jr. — Md.
A.B. 1952, Catholic University of America

Richard Vernon Erkenbeck — D.C.
B.S. 1952, University of Maryland

John Jacob Evans — Pa.
A.B. 1947, Lehigh University
M.S. 1951, The George Washington University

Ben Wayne Feather — D.C.
A.B. 1952, Duke University

Norman Francis Fee — N.M.
A.B. 1952, Carleton College

John Fenick — N.J.
B.S. 1952, Rutgers University

Robert Courtney Garcia — Fla.
B.S. 1949, University of Florida

Lynn Darcey George — Va.
A.B. 1953, The George Washington University

Myron Don George — Kans.
(With distinction)

Raymond Jacobus Gibbings — Ariz.
A.B. 1952, Stanford University

Kenneth Donald Graham, Jr. — Wash.
B.S. 1952, University of Washington

Harold Ronald Hand — Pa.
B.S. 1952, Franklin and Marshall College

Elton Herman — D.C.
(With distinction)

John Calvert Holley, Jr. — Fla.
A.B. 1952, Vanderbilt University

Edwin Wilford Jackson — Calif.
A.B. 1952, Occidental College

Richard Allen Kahlbaugh — Pa.
(With distinction)
B.S. 1952, Franklin and Marshall College

Richard William Kimmerling — D.C.

Herbert Louis Kotz — D.C.
(With distinction)
A.B. 1953, The George Washington University

Sarah Pamelia Leach — Md.
(With distinction)
A.B. 1952, Wells College

Melvin Arthur Lester — Mont.
A.B. 1952, Montana State University

Walter Rufus Lohmeyer — Mass.
B.S. 1951, Tufts College

Gerald Franklin Lowe — D.C.
A.B. 1953, The George Washington University

Robert Joseph Macaulay, Jr. — D.C.
A.B. 1952, Georgetown University

Robert Cornelius Mahoney — Mich.
B.S. 1952, Michigan State University

James Ralph Marquis — N.J.
A.B. 1952, Carleton College

Frank Mate, Jr. — N.J.
A.B. 1952, Dartmouth College

Robert Jones Mattson — N.J.
B.S. 1951, University of Vermont

Reginald Pyne McManus — Maine
(With distinction)
A.B. 1952, Bowdoin College

Robert Allen Miller — Fla.
A.B. 1952, Duke University

Harold Robert Mogenhamer — Idaho

Eldon Lorren Mohr — Minn.
A.B. 1952, Concordia College
B.S. 1954, University of North Dakota

Stanley Adolphe Mueller, Jr. — Calif.
A.B. 1952, University of California

Sterling Burns Mutz — Calif.
A.B. 1952, University of California

Robert Norman Nelson — Va.
A.B. 1951, B.S. in Med. 1954, University of North Dakota

Elmer Ford North — Calif.
A.B. 1952, Stanford University

Ray Andrew Olsson — Va.

Stephen Stavros Pappas — D.C.
B.S. 1952, The George Washington University

Richard Livingston Pentecost — Va.
A.B. 1951, The George Washington University

Robert Dean Phillips — Ala.
B.S. 1952, Howard College

Mark Bradford Raymond — Md.
B.S. 1951, University of Maryland

Henry Harold Reily, Jr. — Calif.

John Charles Rhoads — Va.
B.S. 1952, St. Francis College

Richard Budge Rich — Calif.
A.B. 1951, University of California at Los Angeles

Donald William Richman — Canada

George Leonard Rivara — N.Y.
A.B. 1952, Syracuse University

Victor Schocken — D.C.
A.B. 1942, New York University
M.S. 1944, Oregon State College
Ph.D. 1948, California Institute of Technology — N.J.

Roger Hall Shannon — Pa.
(With distinction)
A.B. 1951, Dartmouth College

Albert Lester Sheffer II — Ohio
B.S. 1952, Franklin and Marshall College

Ernest James Simak — Calif.
B.S. 1952, Western Reserve University

Mansfield Ferry Williams Smith — Conn.

David Deal Snyder — Fla.
(With distinction)
B.S. 1952, Northwestern University

Ronald Tice Spangler, Jr. — Pa.
A.B. 1952, Duke University

Thomas Andrew Sperring — Va.
B.S. 1952, University of Pittsburgh

James Logan Stith — Utah
A.B. 1952, The George Washington University — Fla.

Spafford Ray Sumsion

Neofytos Theodore Tsangaris — Puerto Rico
B.S. 1952, Duke University

José Bernardino Vázquez — Mass.
B.S. 1952, Muskingum College

James Hubbard Weeks — D.C.
B.S. 1952, University of Massachusetts

Harry Wesley Wheelin — Wash.
B.S. 1952, The George Washington University

John Daniel Wickes — Pa.
(With distinction)
B.S. 1954, University of Washington

Kathryn Anne Williams — D.C.
(With distinction) — N.Y.
B.S. 1953, University of Pittsburgh

Robert Edwin Wilkins

Gilbert Herbert Young — D.C.
A.B. 1952, College of the City of New York

Lawrence Irving Zaroff
(With distinction)

THE LAW SCHOOL

Bachelor of Laws

October 15, 1955

J. Edgar Baily — Pa.
A.B. 1950, University of Pittsburgh

William Clifford Barbee — Va.
A.B. 1950, The George Washington University

Stanley Norman Bastacky — Pa.
B.B.A. 1951, University of Pittsburgh

Victor Rudolph Beckman — Md.
B.S. 1952, University of Wisconsin

Edward Ferris Bennett III — D.C.
A.B. 1951, University of Maryland

Manuel de Eshegary — Spain
A.B. 1952, The George Washington University

Theodore Edward Edelschein — D.C.
A.B. 1952, The George Washington University

Alfred Chester Flather, Jr. — Va.
B.S. 1952, Wilson Teachers College

Betty Mace Hedrick — D.C.
A.B. in Govt. 1952, The George Washington University

Charles Patrick Hovis — N.Y.
A.B. 1951, Hamilton College

Elvina Frances King
A.B. 1951, The George Washington University

Alvin Kornhauser — D.C.
A.B. in Govt. 1952, The George Washington University

Gerson Balfour Kramer — Md.
A.B. 1951, Rutgers University

Lawrence Edwin Laubacher — Md.
B.E.E. 1952, The George Washington University

Joseph Roland Leclair — Md.
B.S. in M.E. 1948, University of Maine

William Bryant Luck — Va.
A.B. 1948, University of Richmond

Julia Munash

David Monroe Marsh — W.Va.
A.B. 1951, Bowdoin College — Md.

John D. McCabe — N.Y.
A.B. 1947, The George Washington University

William Smith McCurry, Jr. — Md.
B.S. 1948, University of South Carolina

Robert Eugene Meader — Mich.
A.B. 1952, University of Michigan

Creighton Roland Meland — Md.
B.S. in E.E. 1952, University of Wisconsin

Paul Maxfield Norris — Md.
B.S. 1946, United States Military Academy

Carl Joseph Pasrowski — N.Y.
B.S. 1948, Cornell University

William Matthews Porter — Fla.
A.B. 1950, University of Connecticut

John Fletcher Reath III — Md.

Keith Bradford Romney — Utah
B.S. 1952, University of Utah

John Powell Ryan — Md.

James Spead — N.Y.
B.E.E. 1950, Cooper Union College

Francis DeLashmutt Thomas, Jr. — Md.
A.B. 1951, Dartmouth College

Francis Wayland Young — Va.
B.S. in M.E. 1950, University of Alabama

February 22, 1956

Richard Edward Aegerter — Idaho
B.S. in A.E. 1948, B.S. in C.E. 1950, Utah State Agricultural College

Ralph Roger Barnard — Va.
B.E.E. 1947, Cornell University

John Gardner Batchelder — Va.
B.S. 1950, University New Hampshire

Robert Osborne Boyd — Oreg.
A.B. 1926, Amherst College

Robert Baldwin Buckley — D.C.
B.S. in Eng. 1942, The George Washington University

John Henry Costello, Jr. — Va.
A.B. 1950, University of Cincinnati

Albert Gaetan Craig, Jr. — Va.
B.S. in M.E. 1947, University of Kentucky

Allen Benjamin Curtis — Ohio
B.Ch.E. 1943, Penn College

Richard Welton Damever — Wash.
A.B. 1947, University of Washington
A.M. 1948, Fletcher School of Law and Diplomacy
M.B.A. 1950, Harvard University

Lorimer Nathaniel Davis — Va.
A.B. 1942, Marietta College

Benjamin DeWitt — D.C.
B.S. in E.E. 1948, University of Arizona

John Francis Dominguez — Texas
A.B. 1953, Southeastern State College

Alfred Carl Franklin — Va.
A.B. 1949, University of Virginia

Eugene James Garbutt — D.C.
B.S. 1950, University of Wisconsin

Paul Weatherly Garrett — Va.
A.B. 1949, The George Washington University

Harold Frederick Golding, Jr. — Va.
B.S. in B.A. 1951, University of Richmond

Frances Hardman Goodwin — Va.
A.B. 1952, Denison University

George Gordin, Jr. — Pa.
A.B. 1949, State University of Iowa

James Andrew Hamilton — Va.
A.B. 1953, Morningside College

John Dalton Heckert — W.Va.
A.B. 1951, West Virginia University

William Reed Howard — Va.
A.B. 1954, The George Washington University

Frederick John Horzeker, Jr. — Mass.
B.S. 1940, Tufts College

George Richard Hyde — Idaho
B.S. 1952, Brigham Young University

John Zehner Kepler — Va.
B.S. 1942, Northwestern University

Edna Kropp — N.Y.
A.B. 1941, Brooklyn College

Neal Theodore Levin — D.C.
B.S. 1950, University of Virginia

James John Lindsay — W.Va.
B.S. in M.E. 1951, West Virginia University

Ross Galloway Macaulay — Md.
A.B. 1952, The Johns Hopkins University

Shelton Boyce McAnelly — Va.
B.S. 1942, Louisiana State University

Donnan Dwight McGraw — Va.
B.M.E. 1948, Georgia Institute of Technology

Julius Conrad Meier — Va.
B.S. in E.E. 1940, Clarkson College of Technology

John Byron Moreland — Minn.
A.B. 1950, University of Minnesota

Gordon Krespaw Mosestone — Md.
B.S. 1949, M.S. 1951, Massachusetts Institute of Technology

John Kenneth Mullarney — D.C.
M.E. 1950, Stevens Institute of Technology

Frances Taylor Norrington — D.C.
A.B. 1952, The George Washington University

Richard Conner Pinkham — Md.
B.S. in Ch.Eng. 1948, Northeastern University

Mark Edwin Richardson II — Colo.
A.B. 1951, Western State College of Colorado

Thomas Arrington Rymer — Md.
B.C.E. 1948, Cornell University

William Cooper Saban — Md.
B.S. 1951, University of Maryland

Samuel Sawka — Pa.
A.B. 1950, Wilkes College

Robert Marion Sayre — Va.
A.B. 1949, Willamette University

Hiram George Schweitzer — Va.
A.B. 1940, Tufts College

Laurence Taylor Scott — Md.
B.S. 1950, Niagara University

Angelo John Smerdel — Conn.
A.B. 1949, Indiana University

Edward Andrew Sroka — Md.
B.S. 1941, Purdue University

JUNE 6, 1956

Frank LeRoy Abbott — Md.
A.B. 1939, Central College

Aaron Isaac Alembik — Va.
B.S. in B.A. 1953, Georgetown University

Edward C. Allen — Md.
A.B. 1940, Gettysburg College

Mary Jean Zorel Bastian — Mo.
A.B. 1951, The George Washington University

Martin Breitkopf — N.Y.
B.S. in B.A. 1951, Ohio State University

Franklin Herman Butterfield — Utah
A.B. 1940, University of Utah

Edward Poland Cannon — Md.
B.S. 1954, University of Maryland

Edwin John Carpenter, Jr. — N.Y.
A.B. 1952, The George Washington University

Lowell Francis Christy — Fla.
B.S. in F.S. 1950, Georgetown University

Douglas Marvin Clarkson — Va.
B.E.E. 1950, Cornell University

John Pope Cole, Jr. — Md.
B.S. 1953, Alabama Polytechnic Institute

J. Wendell Crain — D.C.
B.S. 1941, Northwestern University
M.B.A. 1947, Harvard University

William H. Davis — Va.
A.B. 1951, Bowdoin College

Ben Franklin Dixon — N.C.
A.B. 1950, University of North Carolina

Robert Galloway Dixon, Jr. — Md.
(With distinction)
A.B. 1943, Ph.D. 1947, Syracuse University

Thomas William de Zerega — Va.
A.B. 1951, Municipal University of Wichita

William John Driscoll — N.Y.
B.B.A. 1951, Manhattan College

Richard Hutchins Dyer — D.C.
A.B. 1951, Yale University

William Scott Eubanks, Jr. — N.C.
B.M.E. 1951, North Carolina State College

Sylman Isaacs Euzent — Md.
B.S. 1950, University of Maryland

Abraham Fred Starobin — Md.
B.S. in E.E. 1950, University of Maryland

Werner Strupp — Md.
A.B. 1949, The George Washington University

Garland Parnell Thompson — S.D.
William Everett Triplett — Va.
B.S. in F.S. 1949, Georgetown University

Robert Augustus Tron, Jr. — Md.
A.B. in Govt. 1951, The George Washington University

Peretz Wellington — Va.
A.B. in Govt. 1950, The George Washington University

William Neal Wray — Md.
B.S. 1952, University of Maryland

Anthony Simon Zummer — Ill.
B.S. in M.E. 1950, Purdue University

Stanley Alfred First — D.C.
B.B.A. 1940, University of Miami

Fred Fisher — Pa.
B.S. in E.E. 1952, Drexel Institute of Technology

Maurice Carl Fleming — Md.
A.B. 1934, Western Maryland College
A.M. 1938, Ed.D. 1952, Columbia University
Ph.D. 1942, New York University

Jack Miller Freeman — N.C.
B.S. 1949, Florida Southern College

Albert Gordon — Va.
B.M.E. 1944, College of the City of New York

John William Gore — Va.
A.B. 1947, Shepherd State College
A.M. in Ed. 1950, The George Washington University

Harvey Robert Hale — N.Y.
A.B. 1951, State University of Iowa

Frank Rey Herbert — Ohio
A.B. 1953, Middlebury College

Paul Hoffland — Calif.
A.B. 1950, Princeton University

Charles Dallett Hoopes — Md.
B.S. 1951, Haverford College

Charles Anthony Iovino, Jr. — D.C.
A.B. 1952, The George Washington University

Jefferson Donald Keith — Md.
B.S. 1953, University of Maryland

Ralph Saint Clair Kendall — Pa.
B.S. 1951, Pennsylvania State University

Thomas Francis Kern — D.C.
B.S. 1918, United States Military Academy

Thomas Edward Kristofferson — Mich.
B.S.E. 1950, University of Michigan

Ted Denise Kuemmerling — Ohio
A.B. 1950, Pennsylvania College

Earl Frederick Lane — Iowa
A.B. 1934, Carleton College

Victor Rosendahl Le Valley, Jr. — Md.
A.B. 1952, Duke University

Alan Sherwood Loesberg — Md.
B.S. 1946, United States Merchant Marine Academy
B.S. 1950, Georgetown University

Theodore J. [illegible] Md.
B.M.E. 1948, College of the City of New York

Joseph Anthony Marzione, Jr. Utah
A.B. 1951, Brigham Young University

James Edgar Masterson Ky
B.S. 1952, Berea College

William Leonard McAndrew Pa.
B.S. 1942, Pennsylvania State Teachers College, East Stroudsburg

Robert Page McGee Va
B.S. in C.E. 1950, Virginia Polytechnic Institute

Gerald Leonard McGrynn, Jr. Iowa
B.S. in Gen. Eng. 1951, Iowa State College

Robert Vance McNamara Iowa
A.B. 1951, The George Washington University

Walter Clarence Miller Pa
A.B. 1951, Pennsylvania State University

Milan Carl Miskovsky Ill
B.S. 1948, M.F. 1949, University of Michigan

Henry McDonald Moore S.C
A.B. 1951, The Citadel

James Robert Morrison D.C.
B.S. 1951, The George Washington University

Lawrence Marseilles Murphy D.C.
A.B. 1953, The George Washington University

Harold Franklin Nuttmann Va.
A.B. 1950, The George Washington University

Stanley William Pierce Nev.
B.S. 1951, University of Utah

Joseph Daniel Reed, Jr. D.C
A.B. 1952, The George Washington University

Roger Stanley Reed Pa.
A.B. 1953, Franklin and Marshall College

Richard Morton Richmond W.Va.
B.S. 1951, Marietta College

Thomas Samuel Ridge W.Va.
A.B. 1951, West Virginia University

Max Devone Ridley Okla.
A.B. 1950, University of Oklahoma

Frederick Hetzel Robbins N.Y.
B.S. 1953, University of Pennsylvania

Thomas Harris Rosenfeld R.I.
A.B. 1950, Brown University

Robert Lee Rowland Kans.
A.B. 1951, University of Nebraska

Edward Antonio Cross Rumbaugh R.I.
A.B. 1951, Providence College

Jay F. [illegible] Va.
A.B. 1952, Washburn College

Joseph Salsup Md.
A.B. 1951, University of Maryland

Joseph Lamar Saltzgiver D.C.
B.S. 1950, Wilson Teachers College

Richard Edward Schweiger, Jr. Va
B.S. 1948, College of the Holy Cross

Henry Thomas Sem, II Md.
B.S. 1951, University of Maryland

Jacque Skye S.A. Md
A.B. 1951, University of Maryland

Jonathan W. Stout D.C.
A.B. 1950, Yale University

Donald Joseph Sweet Va
B.S. in Civil Eng. 1951, Bucknell University

James Donald Smith Md
A.B. 1941, University of Omaha
A.M. 1944, Western Reserve University

Robert Henry Stone Ohio
A.B. 1948, Mount Union College

Morton Leo Tepper Va
A.B. 1948, A.M. 1949, New York University

Willard Clinton Underdale Md.
B.M.E. 1948, College of the City of New York
M.S. 1955, Rensselaer Polytechnic Institute

Guy Everett Van Riswick Va
A.B. in Govt. 1950, A.M. 1951, The George Washington University

Joseph Vellone N.J.
A.B. 1948, New Jersey State Teachers College, Montclair

Robert William Walker Okla
B.S. 1950, United States Naval Academy

George Cadwallader Wallace D.C.
A.B. 1951, University of Pittsburgh

Rudman William Wallis Pa
A.B. in Govt. 1954, The George Washington University

James Rufus Wilson D.C.
B.S. in C.E. 1947, Stanford University

Bachelor of Laws in National University

October 15, 1955

Thomas Boyers IV Tenn.
James Richard Campbell D.C.
B.S. in E.E. 1943, Ohio Northern University
Allen Cordon Oreg.
Paul Joseph Glynn Va
A.B. 1948, College of St. Thomas
B.S.L. 1951, University of Minnesota

Edward Hance Hance IV Va
B.S. 1946, University of South Carolina
Moses Ted Raptes Ohio
B.S. in Ch.E. 1945, Case Institute of Technology
John Francis Smith D.C.

February 22, 1956

Luther Huyett Bender Pa.
E.E. 1927, Lehigh University
M.S. 1931, Ph.D. 1949, Columbia University

Marie Acer Crano D.C.
Margaret Agnes Deeds D.C.
James Joseph Fenner Conn.
A.B. 1945, Rider College

Daniel Lee Harbour D.C.
Emil Albert N... Md.
B.S. 1948, West Virginia University
Thomas Dewey Quinn, Jr. Md.
B.S. in F.S. 1949, Georgetown University
John Nelson Thurman D.C.
B.S. 1946, United States Merchant Marine Academy

June 6, 1956

Daniel Jacob B. Bierman Md.
Calvin Woodward Day Conn.
Robert Henry Stevenson Va.
Jack Irving Wilkerson Va.

Juris Doctor

October 15, 1955

John Wilson Baska Kans.
B.S. in 1939, Kansas State College
Julian Mitchell B... S.C.
B.B.A. 1951, University of Georgia
John Lenny C... Mich.
A.B. 1950, Michigan State College
Samuel Wesley Crabb S.D.
A.B. 1951, University of Denver
Bruce Quinn... Md.
A.B. in Govt. 1951, The George Washington University
Eugene Emery D.C.
A.B. 1952, The George Washington University
Marshall Closson Gardner Md.
B.S. 1943, M.S. 1950, The George Washington University
Charles Lester Garner Nev.
B.E.E. 1947, University of New Hampshire
Emanuel Herbert Liss Ohio
B.S. 1949, Ohio State University
Michael Marchese, Jr. Va.
A.B. 1950, Dartmouth College
Richard Mathus Merriman Ill.
B.S. in E.E. 1950, Milwaukee School of Engineering
Jack Earl Roberts Ariz.
B.S. 1952, Brigham Young University
Louis R... N.Y.
A.B. 1948, Brooklyn College
A.M. 1949, New York University
Hugh Albert Madison Shafer, Jr. Va.
A.B. 1951, University of Maryland
William Paul Stalsmith, Jr. Md
A.B. 1950, The George Washington University
George Rawley Wright Del.
A.B. 1951, Washington College

February 22, 1956

Paul Florian Assenzeni Colo.
B.E.E. 1950, Marquette University
M.S. in E.E. 1951, Harvard University
James Harold P... Va.
B.S. 1950, University of Missouri
William Wade Bu... Mo.
(With distinction)
B.S. in C.E. 1948, The Citadel
Jack B... Va.
B.S. 1949, Ed.M. 1952, Pennsylvania State University
John Adam H... Pa.
A.B. 1951, University of Virginia
John Edward Hu... Va.
B.S. 1950, Pennsylvania State University
William Eugene H... Pa.
A.B. 1950, University of Indiana
Harold Lee Jo... Md.
B.S. in E.E. 1952, California Institute of Technology
Arvin Morris Kramish Calif.
A.B. 1947, A.M. 1949, Denver University
Edwin John Monsma Mich.
A.B. 1951, Calvin College
Ricardo Allen Ratti Wash.
(With distinction)
B.S. 1944, United States Coast Guard Academy
Gideon Franklin Rothwell Mo.
B.S. in M.E. 1949, University of Missouri
Thomas Eugene Smith Md.
B.S. in Met.Eng. 1951, Missouri School of Mines and Metallurgy
William Thompson, Jr. Md.
A.B. 1953, Harvard University
David William Woods Va.
B.S. 1942, United States Coast Guard Academy

June 6, 1956

Fernando Acevedo Puerto Rico
B.S. 1955, University of Maryland
Miles Janney Brown Pa.
A.B. 1948, Swarthmore College
Charles Marcellus C... Va.
(With distinction)
A.B. 1942, Southeastern University
Robert Patrick Casey Mo.
A.B. 1950, College of the Holy Cross
Phillip Henri De Turk Va.
A.B. 1954, The George Washington University

William Norman Early — Calif.
(With distinction)
A.B. 1953, The George Washington University

Thomas Frances Greaves — Va.
A.B. 1954, Occidental College

•James Ray Hall — Md.
B.S. 1948, West Virginia University

John Franklin Lee — Utah
A.B. 1955, Brigham Young University

James Forbes Merrow — Va.
(With distinction)
A.B. 1954, The George Washington University

Sofia Pauline Petters — Va.
A.B. 1948, University of North Carolina

Edwin Howard Seegrist — Md.
A.B. 1951, A.M. 1954, Johns Hopkins University

Robert Morris Sweeting — Puerto Rico
A.B. 1941, University of Illinois

Farrell Roy Worlow — Md.
B.S. 1951, The George Washington University

Frances Joseph Wilson — N.J.
B.B.A. 1953, Upsala College

Master of Laws

October 15, 1955

Isidore David Blumenfeld — N.Y.
B.S. in E.E. 1949, Case Institute of Technology
J.D. 1955, The George Washington University

Hoang Han Kim — Korea
LL.B. 1954, Seoul University
M.C.L. 1954, The George Washington University

February 22, 1956

William Denny Dixon — Va.
A.B. 1943, Emory and Henry College
LL.B. 1948, University of Richmond

Thomas Nixon Gregor — S.C.
A.B. 1946, LL.B. 1947, University of South Carolina

Edward Gregory Grey — D.C.
B.S. 1943, M.S. 1951, Purdue University
Dr. en Droit 1955, University of Lyon
LL.B. 1954, The George Washington University

Richard Hemseth — Va.
A.B. 1951, LL.B. 1952, The George Washington University

Eugene John Kanjuntan — D.C.
B.S. 1931, University of Illinois
LL.B. 1954, The George Washington University

Carlos Marcus Moore — Calif.
B.S. 1950, University of California
LL.B. 1953, Hastings College of Law

Morton Namrow — Fla.
B.S. 1949, University of Chicago
LL.B. 1954, University of Miami

George Henry Read — Fla.
A.B. 1936, University of Florida
LL.B. 1950, The George Washington University

James Stanley Tassin — Va.
A.B. 1948, Northwest Louisiana State College
LL.B. 1954, The George Washington University

John Lester Tierney — Wis.
A.B. 1925, University of Minnesota
LL.B. 1938, University of Wisconsin

Arnold Jordan Weber — Md.
Phi B. 1942, Marquette University
A.M. 1950, Harvard University
LL.B. 1954, The George Washington University

June 6, 1956

Joseph Chandler Burton — D.C.
B.S. 1928, Alabama Polytechnic Institute
J.D. 1931, University of Chicago

John Thomas Cotter Daugherty — Minn.
A.B. 1945, LL.B. 1948, The George Washington University

Charles J. Fahy — Mo.
LL.B. 1931, University of Missouri

Nathan Cheney Fava — Md.
A.B. 1949, Amherst College
LL.B. 1948, Harvard University

Eugene Leslie Griffin — Md.
B.S.L. 1942, LL.B. 1950, University of Minnesota

Damon Matt Gunn — Iowa
B.S. 1923, United States Military Academy
LL.B. 1937, Yale University

Edwin Deane Leonard — Ill.
A.B. 1930, Fremont College
LL.B. 1933, Harvard University

John Alexander McWhorter, Jr. — D.C.
A.B. 1947, LL.B. 1950, Washington and Lee University

Virginia Lee Riley — D.C.
LL.B. 1942, National University

Jack Earl Roberts — Ariz.
B.S. 1952, Brigham Young University
J.D. 1955, The George Washington University

Bessie Marguerethe Rothe — Va.
A.B. 1934, A.M. 1935, B.S. in L.S. 1941, Syracuse University
LL.B. 1948, The George Washington University

•Degree conferred posthumously

Theresa Clarke Scott — N.J.
A.B. 1942, Barnard College
LL.B. 1945, Columbia University

Ethan Bedee Stroud — Texas
A.B. 1942, Virginia Military Institute
LL.B. 1949, University of Texas

Va

Henry George Weissenberger
B.E.E. 1950, Georgia Institute of Technology
J.D. 1953, Emory University

Master of Laws in National University

June 6, 1956

Walter Warren Johnson — Va
B.S. 1944, University of North Carolina
LL.B. 1954, Columbus University

Master of Comparative Law

February 22, 1956

Ivan Stoyanov — D.C.
LL.B. 1940, University of Sofia
LL.D. 1947, University of Innsbruck

June 6, 1956

Cesar C. Servando — Philippines
LL.B. 1955, University of the Philippines

Master of Comparative Law (American Practice)

February 22, 1956

Peter Alexander Heidenberger — Md.
LL.B. 1948, LL.D. 1949, University of Munich

Md.

Vaino John Riismandel
Diploma 1942, LL.M. 1943, University of Tartu
Ph.D. 1946, Friedrich-Schiller University

Zenon Nizankowski — D.C.
J.D. 1927, University of Cracow

June 6, 1956

Hugh G. Fiser — Va
Doctor of Laws 1914, Charles University, Prague

THE SCHOOL OF ENGINEERING

Bachelor of Civil Engineering

June 6, 1956

Joseph Edison Bell — Va.
Thomas Harlan Birmingham — D.C.
Bland Calvin Burns — Va.
B.M.E. 1950, The George Washington University

D.C.
Va.
Va.
D.C.

Edward Shain Keen
James Franklin Saunders, Jr.
William Clark Stamper
Robert Moffett Weir

Bachelor of Electrical Engineering

October 15, 1955

Praveen Kantilal Jariwala B.S. 1946, University of Bombay	India	Mariefrances O'Keefe	Pa.
		James Pascal Richardson	Va.

February 22, 1956

*Howard Lee Crumley	Va.	John William Savage	D.C.

June 6, 1956

Stephen Foss Andersen, Jr.	Md.	Harlan John Oelke	Kans.
Melvin Michael Brady	Md.	Wilbur C. Olin	D.C.
James Alan Cauffman	D.C.	Henry Breckenridge Parris, Jr.	Va.
Sylvester James Diehl	Md.	Paul Andrews Robey, Jr.	Va.
Louis Leighton Dougherty	Pa.	Gustave Shapiro	D.C.
Gope Hingorani	India	John Henry Slothower	Md.
John Brock Horton	N.C.	Curtis Montague Stout	Md.
Robert Kee	Md.	Julian Steven Stuckey	Md.
Donald Bain Keever	N.C.	Juan Torres Ibu Morales	Venezuela
Samuel Allen Mawhood	D.C.	N.E. 1945, United States Naval Post Graduate School	
Harry Kenneth Morlock A.B. 1950, The George Washington University	D.C.		
James Glick Murray B.S. in M.E. 1948, University of Maryland M.S. in M.E. 1952, University of Washington	Md.		

Bachelor of Mechanical Engineering

October 15, 1955

Paul Oliver Drury, Jr. B.S. in Eng. 1953, The George Washington University	Md.	William Henry Hunley	Va.

June 6, 1956

Howard Emerson Barnes B.S.E. 1955, University of Florida	Md.	George Buck Leung	D.C.
Walter John Bienia		George Jewell McConnell	D.C.
John Howard Brandau	Md.	James Mon	D.C.
Joseph Emerson Cooper A.B. 1938, Indiana University	Md.	Frank Joe On	D.C.
George Elwood Decker	Va.	James Robert Owens	N.Y.
David Byrl Feder B.S. in Ch.Eng. 1948, University of Missouri	Md.	Subhash Satchanan (W.S. Corporation)	India
Donald Brix Fraser	D.C.	Ahmad Mayfield Shah	D.C.
		Granville Murray Stubbs	Va.
	Md.	Edward Allen Willis	Va.
		Victor Roy Yurow	D.C.

Bachelor of Science in Engineering

October 15, 1955

Andrew Calvin Madsen	Va.		

*Degree conferred posthumously.

February 22, 1956

Berry Hudson Nall, Jr. — Md.
Saylor Charles Snyder, Jr. — Md.
Robert Carey Witham — Md.
A.B. in Govt. 1950, The George Washington University

June 6, 1956

Thomas Jefferson Creswell — Fla.
Eric Rudolph Enholm — Va.
James Elsworth Griffin — Mich.
Lester Albright Lawrence, Jr. — Va.
Frank Ioe Oh — D.C.
Arthur Paul Savage — D.C.

Master of Engineering Administration

June 6, 1956

Bennett Robert Ackerman — Va.
B.Mgt.Eng. 1949, Rensselaer Polytechnic Institute
Lawrence Ivins Baird — Ga.
B.S. in E.E. 1949, United States Naval Post Graduate School
Richard Lynn Bernard — Md.
E.E. 1952, University of Cincinnati
Charles Edward Boeing — Calif.
B.E. 1949, University of Southern California
Dale Emerson Fairchild — Texas
B.S.E. 1938, Arkansas State Teachers College
M.S. 1940, Louisiana State University
Robert E. Galer — Wash.
B.S.E. 1935, University of Washington
Donald Anthony Giffhorn — Va.
B.E.E. 1952, Marquette University
Albert James Keller — Mich.
B.S. 1931, United States Naval Academy
Michael Lorenzo — Va.
B.S. 1947, Pennsylvania State University
Chilton White McLaughlin, Jr. — Kans.
B.S. in C.E. 1952, University of Kansas
James Russell Miles, Sr. — Va.
A.B. 1920, Emory and Henry College
Robert Carsten Nordby — Md.
B.S. in C.E. 1950, University of Maryland

Master of Science in Engineering

June 6, 1956

Paul Francisco Gusliotta — N.Y.
B.C.E. 1953, College of the City of New York
Michael Yachnis — D.C.
B.S. 1943, Greek Military Academy
B.S. 1951, Technical Institute of Athens

THE SCHOOL OF PHARMACY

Bachelor of Science in Pharmacy

February 22, 1956

Samuel Irwin Kouzel — D.C.

June 6, 1956

John Edward Ankers — D.C.
Raymond Blanker — D.C.
Frederick Lee Carter — D.C.
A.B. 1951, Catholic University of America
Paul Wayne Chocola — Pa.
(Special honors in Pharmacy)
Leonard Joseph DeMuro — D.C.
Harvey Saul Feinstat — D.C.
Donald Vincent Fisher — D.C.
(Special honors in Pharmacy)
Raymond Fleet — D.C.
George Russell Haymaker, Jr. — Va.
Stanley Allan Koch — D.C.
Joseph Levy — D.C.
Harold Edwin Rinde — N.Y.
Hedwig Margarete Rohling — D.C.
(Special honors in Pharmacy) — D.C.
Albert Steven Roslyn — Md.
Marvin Schneider — N.Y.
(Special honors in Pharmacy) — D.C.
Leonard Jay Shapiro — D.C.
Melvin Simon — Va.
(Special honors in Pharmacy) — N.Y.
Richard Carroll Sullivan — Va.
Jay William Weiss — D.C.
Percy Hunt Willson II — Md.
George Yuen Young — D.C.
Ernest Frederick Zimmerman — D.C.
(With distinction)

THE SCHOOL OF EDUCATION

Bachelor of Arts in Education

October 15, 1955

Marietta Fruit Arnold	Va.	Jean Park Slack	D.C.
Elsie Tompkins Fletcher	Va.	Dorothy Hutchins Moore Thompson	D.C.
James Edwin Fouche	Va.	Elma Hayes Wallace	Va.
Clair Wolf Miller	Va.	Gertrude Chesley Winston	Va.
Stewart Walter Mooney	Md.	Leura Younker	Md.

February 22, 1956

Beverly Blades	D.C.	Elizabeth Anne Kelly	D.C.
Vivian Lemke Burch	D.C.	Lillian Lucy Milione	Pa.
Alyn Thayer Cravens	Ark.		

June 6, 1956

Joseph Henry Allen	D.C.	George John Klein	N.Y.
Vera Ann Allen	Wash.	Jo Ann Levinson	D.C.
(Special honors in Education)		Mary Henry McAulay	N.J.
Toby Tristan Alterman	Md.	Mary Ellen Meizel	D.C.
Gerald Eliot Boisvert	Md.	Anna May Thornhill Prince	Conn.
Mary Catherine Bolger	Ill.	Eleanor Margaret Ready	N.Y.
A.B. 1949, University of Chicago		Louise Leick Reed	Va.
Mary Joan Dahlstedt	D.C.	Harry Edwin Search	Md.
Mary Annie Fields	Va.	Susan Lee Wickham	N.Y.
Marilyn Glasser	Va.	Herbert Withers Ware II	Va.
Robert Alan Gray, Jr.	Pa.	Barbara Elaine Wolin	Md.
Lorna Herzog Greene	Md.	(With distinction—Special honors	
Kenneth Hirschfield	N.Y.	in Education)	
Joseph Lee King	Ala.		

Bachelor of Science in Home Economics

October 15, 1955

Ruby Sharp Robertson Sudlow	Md.

February 22, 1956

Constance Arkins	Md.	Janice Ray Howard Hannebaum	Okla.
Sarah Jane Davis	Wash.	Caroline Brown Montague	Md.
Anne Marie Fahnestock	Ill.	Margaret Stewart Stanziano	Va.

June 6, 1956

Joan Lee Cousins	D.C.	Aldine Margaret Bullard A.B. 1946, The George Washington University	Md.

Bachelor of Science in Physical Education

October 15, 1955

Edward Alexander Cantino	N.Y.	John Henry Hausmann, Jr.	Pa.
Norbert Earl Danz	Pa.	John Joseph Nedrow	Pa.

February 22, 1956

Harry Patrick Kober, Jr.	D.C.	Arnold Jay Tranen	D.C.
Gus Panagoes	Va.	David Louis Waldron	D.C.

June 6, 1956

Leonard Francis Ciemniecki	N.J.	Joseph Francis Petcavich	Pa.
June Ginsburg Goldstein	D.C.	John Amos Todd, Jr.	D.C.
James Merwyn Hill	Va.	Hugo Joseph Valdiserri	Pa.
Mary Ellen Lukens	Va.		

Bachelor of Arts and Master of Arts in Education

October 15, 1955

Edward Alton Hillary — Okla.

Master of Arts in Education

October 15, 1955

James Nathan Andrews — W.Va.
B.S. in Ed. 1941, West Virginia University

Pearly Lorenzo Baumgardner — Va.
A.B. 1938, University of North Carolina

Mary Cecilia Bowler — D.C.
B.S. in Ed. 1931, University of Virginia

John Thomas Broaddus, Jr. — Va.
A.B. 1950, Lynchburg College

Dale Edward Brown — Mo.
B.S. 1942, Kansas State College of Agriculture and Applied Science

Caesar A. Cialfonis — Va.
B.S. in Ed. 1952, Villanova College

William Augustine Coff — N.Y.
A.B. 1950, Adelphi College

Lee Briggs Cuthrie — Alaska
B.S. 1942, American University

Kathryn Delbrick — Fla.
A.B. 1945, New Jersey College for Women

Joseph Warren Eberts — D.C.
B.S. in Ed. 1950, Pennsylvania State Teachers College, Kutztown

Harry William Fogley — Md.
B.S. in Ed. 1931, Maryland State Teachers College

Forrest Livingston Frazier — Va.
B.S. in Ed. 1950, University of Virginia

Constance Vivienne Geerhart — D.C.
A.B. 1952, Cornell University

Adelaide Howard Giddings — Va.
B.S. 1937, Madison College

Lera Evelyn Griffith — Va.
A.B. in Ed. 1952, The George Washington University

Mary Margaret Kellogg — Pa.
B.S. 1937, Wilson Teachers College

Edna Marie Landsiedel — Iowa
A.B. 1936, Iowa State Teachers College

Herbert Donn McAfferty — Pa.
A.B. 1952, Allegheny College

Mary Louise Jordan Miller — Va.
A.B. 1941, University of Texas

Robert Eugene Morrison — N.C.
B.S. 1950, High Point College

Richard Glenn Neal — Va.
A.B. 1952, University of Maryland

William Alfred Neal — D.C.
B.S. in P.E. 1954, The George Washington University

Anne Sheppard Noyes — Md.
A.B. 1951, The George Washington University

Ralph James Pepe — N.J.
B.S. 1951, Adelphi College

David Christian Pinson — Md.
B.S. in Ed. 1952, Florida State University

Harry Pitt — N.Y.
B.S. in P.E. 1952, The George Washington University

Wynette Adamson Ragsdale — Va.
A.B. in Ed. 1946, The George Washington University

James Conniff Reese — Va.
A.B. in Ed. 1953, The George Washington University

Richard Alfred Ross — Mass.
A.B. 1951, Marietta College

Leonard Morris Skinner — D.C.
B.S. in Ed. 1935, Northeast Missouri State Teachers College

Elmer Trexler Smith — D.C.
B.S. in Ed. 1951, Temple University

Zena Nunzia Valenziano — D.C.
A.B. 1940, Louisiana State University

Delbert Junior West — Ohio
A.B. 1951, Wilmington College

Ellen Christine Whitmore — Md.
A.B. in Ed. 1948, Mary Washington College

February 22, 1956

Frances Ronald, Bel — Md.
B.S., 1941, Western Teachers College
Newton Lamar Crawford — D.C.
B.S., 1951, Pennsylvania State University
Catherine Agnes Dunscomb — Md.
B.S., 1940, Pennsylvania State Teachers College, California
Rodo; Charles Fransesen — Md.
A.B., 1949, University of Maryland
William Layne Havens, Jr. — Va.
B.S., B.P.E., 1951, The George Washington University
Frank Xavier Hall — Va.
B.S., 1943, Mount St. Mary's College
Nancy Kathleen O'Neil — Md.
A.B., 1944, Dunbarton College
Nicholas Vincent Perrone — Md.
B.S., in P.E., 1950, The George Washington University
James Joseph St. Laurent — D.C.
B.S., in P.E., 1950, Pennsylvania State Teachers College, East Stroudsburg
Ruth Dunbar Sampson — D.C.
B.B.A., 1948, Westminster College

June 6, 1956

Eula Dotte Bagby — Va.
B.S., 1944, University of Virginia
Laurent Joseph Bernet — Va.
A.B., 1950, Assumption College
Willis Wesley Bennett — Va.
A.B., 1951, San Francisco State College
Joseph Francis Bennett — N.J.
A.B., 1953, The George Washington University
Thomas Joseph Cabelus, Jr. — Conn.
A.B., 1950, Syracuse University
Robert Lamar Carper — Pa.
B.S., 1952, Temple University
Ann Bower Eby — Md.
A.B., 1949, Shepherd State College
Robert Manners Feingenson — N.Y.
A.B., 1953, Queens College
Virginia Marie Grove — Md.
B.S., 1941, Chestnut Hill College
Helen Frances Goldberg — Md.
B.S., 1954, University of Maryland
Alonzo Dudley Fraser — W.Va.
A.B., 1945, A.B. in Ed., 1955, Shepherd State College
Irma Ruth Rippetoe — N.C.
A.B., 1954, Elon College
Jessica Morrison Sanders — Fla.
A.B., 1950, Florida State University
Eugene Wade Stone — Va.
A.B., 1941, University of Iowa
Augustine Patterson Webster — Va.
B.S., in Ed., 1948, Pennsylvania State Teachers College, California

Doctor of Education

February 22, 1956

James Carl Messersmith — Mo.
A.B., 1943, University of Missouri
A.M., in Ed., 1951, The George Washington University
Dissertation: "The United States Office of Education, Its Administrative Status in the Federal Hierarchy"

June 6, 1956

Ernest Walter Snodgrass — Md.
A.B., 1942, Morris Harvey College
A.M., 1949, West Virginia University
Dissertation: "Guidance Functions of Elementary School Teachers"

THE SCHOOL OF GOVERNMENT

Bachelor of Arts in Government

October 15, 1955

John Edward Bartsch, Jr. — Va.
Joseph Brinscomb Jernigan — Va.
Robert Paul Kalish — N.J.
Irving Carl Kessler — Va.
Ethel Lowenthal — D.C.
Antero Aatos Luhtanen — Va.
Richard Mosby McCoy — Va.
Alfred Rozier Rector — Md.
LL.B., 1952, American University
Archie Albert Showell, Jr. — D.C.
Constantine Joseph Smyth III — D.C.
Beverly Madren Thomas — Md.
Kamran Tusla — D.C.
Woodrow Emons Townsend — Md.
Mattie Alice Waldron — Va.

February 22, 1956

Albert Conner Allen	N.C.	Tore Haugeto
Edward Victor Bauer	Va.	Arthur Daniel Hoffman
Thomas Reilly Benedict	D.C.	Betty Mae Maxwell
John Franklin Bowen	Va.	Kelly Thomas McCracken, Jr.
Basil Lincoln Cardello	Mass.	Lester Allen Redding
Bartley Alexander Costello	Md.	John Cornelius Ready, Jr.
(Special honors in Business Administration)		Peter Michael Reda
		Hyman Louis Rosenberg
Albert Lincoln D'Eparo	D.C.	George Edward Saxon
Guy Houston Dorsey	Md.	Paul Pearce Smith
Irwin Paul Edlavitch	D.C.	John Richard Vaile
Nicholas Chris Georgatsos	D.C.	Robert Joseph Weigand
Jack Allen Green	Md.	Ransom Alban Whittle
Norman N. M. Green	N.Y.	Raymond Boyd Wilson

June 6, 1956

Eugene Albamonte	N.Y.	John Longin Kopek
Thomas Allender	Va.	Nancy Bird Krenek
Russel Anthony Arlotta	Md.	Jerome Paul Lewis
Gerald Roy Assmann	D.C.	Robert Joseph Linden
Brady Garland Batt	Texas	Louis Litsky
Charles Erden Bechtel	Pa.	George Peter Mallios
James Homer Bowman	Calif.	Kyuma Mano
Albert William Brand	Md.	Robert Simon Marx
Frank Lowell Brauer	Ohio	William Alexander Matthews
Marvin Joel Brown	Ind.	Robert Vincent McGrath
(With distinction)		Forrest Ross McGraw
William Brigham Brown III	D.C.	William Park McHenry, Jr.
Alexander Spotswood Campbell	D.C.	Donald Lee Mines
George James Cassiby	D.C.	Robert Cleo Mitchell
John Edward Cassell, Jr.	Md.	Paul Bryan Monroe
(With distinction)		(With distinction)
Neil Lewis Carroll, Jr.	D.C.	Alfred Theobald Moret
Carmel James Cassiby	D.C.	William Mundheim
(With distinction)		Nicholas James Natsios
Norman Cohen	D.C.	James Price Oxenham
John Davenport Crehore III	N.H.	Gilbert Jennings Parr, Jr.
George Dimos	Pa.	William Charles Pembleton
Charles Seymour Decker, Jr.	Md.	Ulev Franklin Perdue
Louis John Donofrio, Jr.	N.J.	Lester Alvin Powers, Jr.
John Edward Donovan	D.C.	Judson Daland Reed
John Earle Elliott	Md.	(With distinction)
Abraham Joseph Essrick	Pa.	Robert David Reed
LL.B. 1940, Rutgers University		(With distinction)
James Hilburn Fergusson	Va.	Carolyn Rose Rein
Casimir Anthony Filipowicz	N.Y.	Joseph William Richards
Carl William Fisher	Va.	Lemuel Rivera
Thelma Donaldson Forrest	Md.	Robert Kendall Rochester
Orville Sidney French	Colo.	Roy Martin Rothgeb, Jr.
John Newton Gaardsmoe	Pa.	Paul Monroe Ruffner
Jack Marcus Gantz	D.C.	Leon Irving Salsburg
Richard Joseph Gasparri	Pa.	Gerald George Schleeper
Frederick Easton Gilliam	Va.	Russell Ellwood Shaw
Lincoln Ivan Glasscock	D.C.	Virginia Sisson
George Milton Gohn, Jr.	Md.	Leland Wrightman Smith
Dorothea Mae Grossman	Calif.	Thomas Lewis Smith
Ludlow Leonidas Graner	Va.	James Edwin Swisher
Paul Russell Harris	Md.	Betty Jane Thomas
Barbara Sillars Harvey	Md.	(With distinction)
(With distinction)		Federico Guillermo Varela
Joseph John Hemp	Va.	James Henry Wagner
John Norvill Innes	Ark.	Ernest Carroll Walker
Roy Leslie Kallmyer	Md.	Mabel Marie Walker
Marvin Stanley Katz	D.C.	Robert Charles Wilkie
Van Angello Kertakos	D.C.	Sondra Lee Wobbeking
Martha Fay Kirkpatrick	Va.	Susan Vernon Wood

Master of Arts in Government

October 15, 1955

Ellwood Hershel Beeson
B.S. 1940, Kansas State College of Agriculture and Applied Science — Fla.

Waldron Berry
B.S. 1946, United States Military Academy — Ind.

Charles Lester Brown
A.B. 1949, West Virginia Wesleyan College — W.Va.

Eugene Watson Byrne
B.S. 1954, University of Maryland — Wis.

Calvin Owen Carter
A.B. 1950, Howard University — N.Y.

George Francis Drury
Ph.B. 1951, University of Chicago — Ill.

Herbert Oliver Froslie
B.S. 1954, American International College — Minn.

Donald Harry Gregory
A.B. 1951, State College of Washington — Iowa

Harold Cornelius Henschel
B.S. 1953, University of Maryland — Ind.

Robert Thomas Herbst
A.B. 1952, Butler University — Ind.

Andrew Jerome Kramer
B.S. 1952, Loyola University of Los Angeles — Calif.

William Thomas Kvetkas, Jr.
B.S. 1952, University of Pennsylvania — Pa.

Leonard Coles Lanyon, Jr.
A.B. 1940, University of Arizona — Ariz.

Stanton Michael Rickey
A.B. 1951, San Francisco State College — Calif.

Ellis Arthur Ruppelt
A.B. in Ed. 1951, University of Florida — Mich.

Henry Joseph Sencer
A.B. 1950, American International College — Fla.

Frederick Franklin Smiley
A.B. 1951, Sacramento State College — Ohio

John Harvey Stephens
A.B. 1951, Ohio Wesleyan University — Ohio

Marvin Leslie Stephens
A.B. 1942, University of Georgia — Ill.

Georg Weisz
A.B. 1952, New York University — D.C.

February 22, 1956

William Joseph Mettenet
A.B. 1952, University of Pittsburgh — Va.

Nortar Panyan
A.B. 1949, Clark University — Md.

Louis Proctor Parker
A.B. 1949, Washington College — Md

Richard Charles Roecker
A.B. in Govt. 1952, The George Washington University — Ohio

Michael Beatty Rowan
A.B. 1952, The George Washington University — Md.

Joe Tuttle
B.S. 1943, University of Missouri — N.Y.

June 6, 1956

Leonard Dayton Coe II
A.B. in Govt. 1954, The George Washington University — N.Y.

Robert Essex Devereux
A.B. 1944, Indiana University — D.C.

Raymond Albert Earle
A.B. 1951, Syracuse University — N.Y.

James Norman Eskes
A.B. in Govt. 1950, The George Washington University — N.D.

Saied Shamlou Farahmand
A.B. 1955, University of Dubuque — Iran

Ruth Logue
B.S. 1943, Radcliff College — Okla.

Keith High Miller
A.B. in Govt. 1950, The George Washington University — Md.

Nukkol Prachuabmoh
B.Com. 1953, University of Melbourne — Thailand

Paulette Marie Salto
A.B. in Govt. 1954, The George Washington University — D.C.

Patricia Stoneman
A.B. in Govt. 1952, The George Washington University — Wis.

Robert Dallas Van Briggle
A.B. in Govt. 1950, The George Washington University — D.C.

Master of Arts in Public Administration

February 22, 1956

Maybelle Marr Dang
A.B. 1945, University of California — Va.

Philip Earle Franklin
A.B. in Govt. 1949, The George Washington University — Md.

Gian Domenico Majone
A.B. 1955, University of Padua, Italy — Italy

June 6, 1956

Robert John Hennessy — N.J.
B.S. 1955, University of Maryland

Eugene Loyle Holder — Calif.
A.B. 1953, University of California at Los Angeles

Robert Eugene Masters — Ind.
B.S. 1927, LL.B. 1929, Indiana University

Robert Edward Moller — N.J.
B.S. 1951, Lebanon Valley College

Kenneth [illegible] Sowers — N.Y.
A.B. 1934, St. Stephen's College

Master of Arts in Personnel Administration

February 22, 1956

Mary Jane Phillips — Va.
B.S. in Ed. 1934, University of Pennsylvania

June 6, 1956

David Louis Baxter — Md.
A.B. 1927, St. John's University

Mae Adele Berrian — Mo.
A.B., B.M. 1932, Bethany College
A.M. 1947, Stanford University

Raymond Kenneth Butler, Jr. — Va.
A.B. 1948, University of Richmond

[illegible] — Wis.

[illegible] — Iowa

Russell Nelton Jordahl — N.Y.
B.S. 1926, United States Naval Academy

Robert Melville Landon
A.B. 1940, Allegheny College

Master of Business Administration

October 15, 1955

Stuart Michael Ball — D.C.
A.B. 1934, Lafayette College

Robert Wallace McMillan — Ind.
A.B. 1932, Ball State Teachers College
LL.B. 1937, LL.M. [illegible], S.J.D. 1941, Georgetown University

[illegible] — Md.

Noel Clayton Newquist
A.B. 1940, The George Washington University

February 22, 1956

Willard Earl Griffing — Va.
A.B. in Govt. 1950, The George Washington University

June 6, 1956

Paul Gross Adams, Jr. — Pa.
B.S. 1949, United States Naval Academy

Wallace Lippincott Atkinson, Jr. — Wash.
A.B. 1938, University of Washington

William McKenzie Braybrook — Mich.
B.S. 1940, United States Naval Academy

John Howard Burton — Fla.
B.S. 1941, Rutgers University

James Willard Carter — Ga.
B.S. in Ed. 1938, Georgia Teachers College

David I. Carter — N.J.
B.S. in Com. 1950, University of Virginia

[illegible] — Md.

[illegible] — Va.

[illegible] — Fla.

[illegible] — Mass.

John Augustine Donnelly
B.S. 1942, United States Naval Academy

Robert Joseph Duryea
B.S. 1949, United States Naval Academy

Carl Redmond Dwyer
B.S. 1938, United States Naval Academy

Carlton Robert Eagle, Jr. Va.
B.F.S. 1914, Georgetown University
Ralph Curtis Embrey Kans
B.B.A. 1951, University of Oklahoma
David Payson Erlick Md
A.B. 1937, Harvard University
Stanley William Hencereth Md.
B.S. in B.A. 1937, Ohio State University
George Dewey Hoffman Wash.
B.S. 1934, United States Naval Academy
Howard MacKenzie Humphrey Texas
B.S. 1941, Vanderbilt University
Frank Cox Jones W.Va.
B.S. 1938, United States Naval Academy
M.S. 1943, Massachusetts Institute of Technology
Earl Henry Langenbeck Md.
B.S. in C.E. 1944, University of Missouri
Lucien Berry McDonald Fla
B.S. 1938, United States Naval Academy
John Grattan Metz N.Y.
A.B. 1951, University of Virginia
James Miller Ga.
B.S. 1943, United States Naval Academy
Earl Verll Oglesby Ill.
B.S. 1941, James Millikin University
Gaylord Lorenza Pletcher Ohio
B.S. 1955, University of Maryland
John Elmer Rierson N.J.
B.S. 1920, United States Military Academy
William Hodges Ross Va.
A.B. 1929, Santiago State College
John Michael Ryan Pa
B.S. 1950, LaSalle College
Jerome Joseph Scheela Minn.
A.B. 1941, Carleton College
Julian Ivan Schocken N.Y.
A.B. 1919, University of Alabama
Gordon Waller Smith Iowa
B.S. 1919, United States Naval Academy
Frank Gustav Spranger Calif
B.S. 1926, United States Naval Academy
M.S. 1941, Massachusetts Institute of Technology
Mabel Marie Stockert Ohio
A.B. 1911, Capital University
William Edward Sweeney N.J.
B.S. 1914, United States Naval Academy
M.S. in Aero. Eng. 1941, Aero. Eng. 1941, California Institute of Technology
Carl Joseph Vail, Jr. Texas
B.S. 1950, University of Alabama
Charles Hamlin Walker Utah
B.S. 1901, University of Utah
William Arthur Westlake Va
B.S. in Eng. 1947, Princeton University

Doctor of Business Administration

October 15, 1955

Ralph Johan Herman Liljelund D.C.
B.S. 1944, Technical University of Finland
A.M. 1946, Commercial University of Finland
M.S. in M.E. 1950, Ph.D. 1952, Purdue University
Dissertation: "Management Aspects of the Evolution of Automation with Electronics as a Contributing Factor"

THE COLLEGE OF GENERAL STUDIES

Associate in Arts

October 15, 1955

Angelo Nicholas Castanza Va.
(With distinction)
Robert Lee Jones Ill
Willard Henry Woodruff Va.
Grant Clifton Young Ill.

February 22, 1956

George Fillman Va.
Thomas Joseph Marren N.Y.
Otto Batchart Martinson, Jr. Va
Evelyn Regina Schlosser N.D.
Howard Wayne Smith Ohio
George Ernest Wareche D.C.
(With distinction)

June 6, 1956

Don Howard Blanchard — Calif.
Stella Gomez — Va.
Raymond N. Gramm — N.Y.
Lewis Joseph King — Va.
Edward Francis Price — Pa.
Barbara Ann Wagner — Mass.

Bachelor of Arts

October 15, 1955

Donald Glenn Bussey — Calif.
August Larson — D.C.
Roger William Manteuffel — Minn.
Charles Clay McBride, Jr. — Va.
Richard Harold Ross — Texas
Curtis Reuben Stanley — Ind.
James Bernard Weeks — N.Y.

February 22, 1956

James John Benshoff — Texas
Joseph Stanley Laski — Minn.
John Charles Mouat — Mont.
(With distinction)
Lloyd Joseph Murphy — N.M.

June 6, 1956

Thomas Clayton Kline — Va.
(With distinction)
John Clarence Leverette, Jr. — Fla.
Thomas Joseph Marren — N.Y.
(With distinction)
John Jefferson Peeler — Texas
Robert Urban Rosworm — Kans.
Thomas Charles Shanahan — Pa.
(Hon.)
Howard Wayne Smith — Tenn.
Catherine Steele — Ohio
Alden P. Sullivan — Md.
Charles Harvey Michael Volz

Master of Arts

October 15, 1955

William Arthur McMillan — Md.
B.S. 1951, University of Maryland

February 22, 1956

Reamer Welker Argo, Jr. — Del.
B.S. 1945, United States Military Academy
Harvey Madden Baumgardner — Texas
B.S. 1932, Texas Technological College
Gordon Ferris Bradburn — Ill.
A.B. 1941, DePauw University
Joseph Samuel Cohen — D.C.
B.S. 1944 American University
Ralph Saxe Horowitz — Mo.
A.B. 1941, Washington University
John Cordell Jeffers — D.C.
A.B. in Govt. 1950, The George Washington University
Robert Burns Knox — N.H.
A.B. 1944, University of New Hampshire
Russell Eliot Morrow — Pa.
B.S. 1948, University of Pennsylvania
Peter John Paste — Mass.
A.B. in Govt. 1953, The George Washington University
Edward Bell Patrick — Va.
B.S. 1945, The Citadel
Herman John Ruoff — Wis.
B.S. 1951, University of Wisconsin

June 6, 1956

Edward Raymond Hoffman — Nebr.
B.B.A. 1954, St. John's University
Mary Ann Jobanek — N.Y.
B.S. in Ed. 1946, New York University
Robert Reed Johnston — Oreg.
A.B. 1948, The George Washington University
Charles Lynn Miller — Va.
B.S. 1948, University of Omaha
Harmon Luther Pippin — Minn.
B.S. 1951, Virginia Polytechnic Institute
Joseph Cook Rossers — Md.
B.S. 1952, Illinois Institute of Technology

THE GRADUATE COUNCIL

Doctor of Philosophy

October 15, 1955

Julius Axelrod — Md.
B.S. 1933, College of the City of New York
M.S. 1941, New York University
Dissertation: "The Fate of Sympathomimetic Phenylisopropylamines"

Charlotte Hess Knox — D.C.
B.S. 1945, Temple University
A.B. 1950, A.M. 1951, The George Washington University
Dissertation: "The Influence of Pyrimidines on the Propagation of Poliomyelitis Virus in Tissue Culture"

Ennis Cecil Layne, Jr. — Md.
B.S. 1950, M.S. 1953, The George Washington University
Dissertation: "The Stimulation by Glutamate of Succinate, Fumarate, and Malate Oxidation in Brain Tissue"

Frederic Adams Leonard — Md.
B.S. 1943, M.S. 1948, University of Maine
Dissertation: "An Investigation of Factors in Culture Supernatant Which Limit the Growth of *Brucella*"

Leonard Alexeus Mika — Md.
B.S. 1947, M.S. 1949, University of Michigan
Dissertation: "Studies on the Interference Phenomenon in Mixed Infections with *Brucella* and *Coxiella burnetii*"

Jacob Henry Stopak — N.Y.
B.S. 1942, Georgetown University
M.S. 1950, The George Washington University
M.D. 1955, Howard University
Dissertation: "The Effect of Ferritin on the Mortality Rate and Succinic Dehydrogenase Activity of Mice Subjected to Tourniquet Shock"

Eric Wortman — Va.
A.B. 1951, A.M. 1953, The George Washington University
Dissertation: "The Spartacist Uprising of 1919 and the Cases of the German Communist Movement: a Study of the Relation between Political Theory and Party Practice"

Benjamin James Wilson — Md.
A.B. 1943, M.S. 1947, West Virginia University
Dissertation: "A Study of the Hypersensitivity and Immunity Elicited from Injection and Aerosol Inhalations of Tuberculosis Vaccines"

Helen Chang Yang Yen — D.C.
B.S. 1945, Franco-Chinese University
M.S. 1950, Ohio State University
Dissertation: "The Metabolism of Ureidosuccinic Acid-C^{14} and Its Incorporation into Nucleic Acid Purines in Normal, Tumor-bearing, and X-irradiated Mice"

February 22, 1956

George Bernbaum — Colo.
A.B. 1944, Berkeley College
M.S. 1947, The George Washington University
Dissertation: "Nonresonant Absorption and Collision Diameters of Symmetric Top Molecules"

Carl Boyars — Md.
B.S. 1948, College of the City of New York
M.S. 1952, The George Washington University
Dissertation: "Kinetics and Mechanism of the Oxidation of Substituted Alkylbenzenes"

Nazar Nurred Ismail — Iraq
B.S. 1952, Michigan State University
Dissertation: "A Comparative Study of Colicines Produced by Three Strains of *Escherichia coli*"

Edwin Ira Goldenthal — Md.
B.S. 1952, M.S. 1953, The George Washington University
Dissertation: "Some Aspects of the Metabolism of Trichlorethylene Metabolites"

Henry Pearson Hopper — D.C.
B.S. in Ed. 1931, M.S. in Ed. 1934, University of Pennsylvania
Dissertation: "A Study of the Functions of the Verbs Poreia Go in the Lukelatarine Gospel of Saint Matthew"

George Joseph Jacobs — Md.
A.B. 1941, University of Mississippi
M.S. 1947, West Virginia University
Dissertation: "Studies on Some Blood Coagulation Factors in a Selected Group of Mammals"

Milton Forbes Mace — Ind.
B.S. 1924, M.S. 1926 Purdue University
Dissertation: "Supplemental Credit as a Determinant of Postwar Agricultural Policy"

Alexander Pickard Mathers — Miss.
B.S. 1941, University of Florida
M.S. 1948, Tulane University
Dissertation: "An Investigation of 2-(4'-p-Dimethylaminophenyl-1',3'-butadienyl)-3-ethylbenzothiazolium and Certain Related Compounds"

Hugh Stanton Norton — D.C.
A.B. 1947, A.M. 1948, The George Washington University
Dissertation: "An Economic Survey of the Diesel Locomotive in the Railroad Industry in the United States"

Roland Henry Tanck — Wis.
A.B. 1939, University of Wisconsin
A.M. 1948, The George Washington University
Dissertation: "A Study of Psychological Changes Induced by Reserpine Therapy in a Group of Severely Disturbed Psychotics"

JUNE 6, 1956

Harold Lloyd Best — Va.
A.B. 1942, A.M. 1951, The George Washington University
Dissertation: "An Analysis of the Verbal Content of Psychotherapy"

William Bradley DeWitt — Md.
A.B. 1948, Howard College
A.M. 1952, The George Washington University
Dissertation: "Experimental *Schistosomiasis mansoni* in Mice Maintained on Nutritionally Deficient Diets"

Edmund Winston Jordan Faison — Ill.
A.B. 1948, A.M. 1950, The George Washington University
Dissertation: "Experimental Comparison of the Effectiveness of One-sided and Two-sided Mass Communications in the Influence of Economic Attitudes"

Leon George Goldstein — Md.
A.B. 1946, A.M. 1948, University of Pennsylvania
Dissertation: "A Factor Study of Drivers' Attitudes"

William Daniel Kundin — N.Y.
B.S. 1950 University of Maryland
M.S. 1952, Harvard University
Dissertation: "The Effects of Several Amino Acid Analogues on the Propagation of Influenza A Virus in Tissue Culture"

David Walker Lum II — D.C.
B.S. 1950, M.S. 1951, The George Washington University
Dissertation: "Characterization and Quantitative Measurement of Part of the Urinary Pentose Fraction in the Rat with Reference to the Influence of Thyroid Activity and Cold"

Gertrude Sheva Lum — D.C.
A.B. 1950, The College of Wooster
M.S. 1952, The George Washington University
Dissertation: "Experimental Chemotherapy of PR8 Strain of Influenza A Virus with Particular Reference to Thiosemicarbazones and Diphenyl and Related Compounds"

Joseph J. Martorano — Md.
A.B. 1940, Brooklyn College
M.S. 1944, New York University
Dissertation: "The Effect of Cortisone and Fasting on the Carbohydrate, Potassium, and Sodium Levels of the Liver in Intact and Adrenalectomized Mice"

Nicholas Miltiades Papadopoulos — D.C.
B.S. in 1951, The American University
M.S. 1953, The George Washington University
Dissertation: "Studies on the Mechanism of Absorption of Fructose from the Intestine of the Rat"

Helen Dorothy Park — Md.
B.S. 1946, M.S. 1949, The George Washington University
Dissertation: "Some Effects of X-radiation, Magnesium Sulfate, and Glutathione on *Hydra littoralis*"

Gertrude Patricia Quinn — Md.
B.S. 1943, Fordham University
M.S. 1948, University of Rochester
Dissertation: "Species Differences and Sex Differences in the Metabolism of Drugs"

Robert Tynes Smith III — Va.
A.B. 1948, The George Washington University
Dissertation: "A Stochastic Model for Economic Time Series"

William Ardell Stelck — Iowa
A.B. 1949, Drake University
A.M. 1951, The George Washington University
Dissertation: "The Public Career of Albert Henry Washburn"

Gilbert Lincoln Voss — Fla.
B.S. 1951, M.S. 1952, University of Miami
Dissertation: "The Cephalopods of the Gulf of Mexico"

Herbert Weiss — Md.
B.S. 1949, College of the City of New York
M.S. 1953, The George Washington University
Dissertation: "Isolation and Study of a Cardiotonic Substance from Mammalian Tissues"

HONORARY DEGREES

DECEMBER 7, 1955

Luis Batlle Berres—*Doctor of Laws*

FEBRUARY 22, 1956

Clarence Aiken Aspinwall—*Doctor of Laws*
Leonard Carmichael—*Doctor of Science*
Ulysses S. Grant III—*Doctor of Laws*
Bumpei Kure—*Doctor of Laws*
Alfred Henry Lawson—*Doctor of Laws*

RECIPIENTS OF AWARDS

1955–56

SCHOLARSHIPS

The Alpha Zeta Omega Scholarship: James Parker Shipler

The Alumni Scholarships: William Kyler Craven, Frank Arthur Gregory, Richard Julius Jazbutsky, John Pierson, William John Rapp

The American Foundation for Pharmaceutical Education Scholarships: Frederic Lee Carter, Leonard Joseph DeMino, Donald Vincent Fisher, Patrick Edward McGuire

The American Society of Women Accountants Scholarship: Betty Mae Maxwell (fall semester), Jeannine Delores Miller (spring semester)

The Baron Ambrose Scholarship: Frances Barbara Pross

The Anna Bartsch Scholarship: Sarah Pearson Farrell

The Emma K. Carr Scholarships: John Vincent Canfield, Edmund Parke Crump, Edward Moody Fahey, Harold Leopold Floyd, Gene Dunn Hargrave, Ward Bullard Hazlehurst (fall semester), Eugenia Isaak Lambert, Lewis Arthur Meyers, Richard Joseph Sowell, John Jake Upchurch

The Henry Harding Carter Scholarship: Arnold Lee Snyder, Jr.

The Maria M. Carter Scholarship: William Vernon Van Fleet

The Chi Omega Scholarship: Sally Anne Rice

The Daughters of the American Revolution Scholarship: Mary Joan Duke Gates

The Isaac Davis Scholarship: Lucille Alberta Arnston

The District of Columbia Pharmaceutical Association Scholarship: Sylvia Lee Zitzer

The Charles Worthington Dorsey Memorial Scholarship: James Forbes Menow

The School of Engineering Scholarships: Theresa Dennison Knauss (fall semester), Frederic Richard Stark, Stephen Arthur Platt (spring semester)

The General Motors College Scholarship: Edna Mae Ratnowick

The Anna Spicher Hampel Scholarship: Maya Peabo

The Elma Lewis Harlem Scholarship: Priscilla Taylor Palmer

The Hazleton Scholarship: Barbara Elaine Wallin

The High School Scholarships: Beverly Jane Alexander, Marcia Barrett, Walter Lawrence Baumann, Martha Alice Britton, Robert Selwyn Chatkon, Tsoy Pang Chan, Lee Tzu Chang, Elizabeth Jane Dittenhafer, Park William Eggenschwiler, Jr., Edith Margaret Fenton, Karin Maria Floyd, David Hirsch Fram, Angela Fern Guerra, Julius Morton Goodman, Joyce Marie Gray, Peggy Jean Hastings, Rosalind Hauk, Jo Ann Henry, Orfred George W. Heybey, William Randolph Hix, Mary Elizabeth Hoffman, Harold Duane Hoiberg, Eugene Gary Hoiberg, Samuel Jay Keyser, Shirley Ann Landes, Marcus Gerald LaPlaca, Ronald Gordon Latimer, Barton Paul Mayers, Charles Robert Mock, Robert Hugh Moore, Faye Gee Motyka, David Mesmed Perkins, Stanley Sinclair Pickett, Carol Landis Picton, Frederic Barrie Say, Ernest Rodney Shiflet, Sandra Garland Shobe, Mary Sandra Shoemaker, Stanley Sherrel Smith, Roger Earl Spitzer, David Perry Steinman, Barbara Lynn Stuart, Sandra Jean Swendner, Anna Margaret Szymczak, Valery Thornton, Bernhard Rainer Trommler, Harold Lee Troutman, Ethel Gisela Tucker, Goldie Aurelia Weiss, Rosa Dale Weaver, Ann Morgan Williams (fall semester), Robert Morgan Wilson, Gilda Joyce Wingeard, Wailey Lake Wing, Carol Woodbeck Wyman (fall semester)

The High School Discussion Conference Scholarship: Barry Lee Hermeyen

The Kappa Alpha Theta Scholarship: Diane Engelman Epstein

The Kappa Psi Scholarship: Joan Marie Elso
The Law School Scholarships: Robert Patrick Casey, William James Critchlow III, William John Driscoll, Charles Alan Melton, Edwin John Monama (fall semester), Noel Irving Smith, Ewell Gene Wade (fall semester), Francis Joseph Wilson, Raymond Warren Young
The Eugene and Agnes E. Meyer Scholarships: Dulcey Ann Brown, Paul Grosvenor Douglas, Amie Charlene McDonald, Walter Albert Morgan, Kyra Barbara Mosél, Ann Tsuneko Murayama, William Stuart Riggsby, Otto Herman Ulrich, Jr., Elizabeth Lynn Weber
The A. Morehouse Scholarship: John Alan Russell
The National League of Masonic Clubs Scholarship: Ronald Joseph Kransdorf
The Newspaper Scholarships:
The Evening Star: Hugh Logan Newell (fall semester), Richard Karl Tierney
The Washington Post and Times Herald: Arthur James Conlon, Robert Francis O'Connor
The Panhellenic Association of Washington, D. C., Scholarship: Carole Theresa Hesse
The Paul Pearson Scholarship: Paul Wayne Chocola
The Lula M. Shepard Scholarship: John Edward Duncan
The David Spencer Scholarship: Orron Eugene Kee
The Mary Lowell Stone Scholarship: Lucille Alberta Anstine
The Student Activities Scholarships: Robert Thomas Allwine (spring semester), Joseph Patrick Augustine, Claude Bo Austin, Arden Baker, Victor A. Bartlett, Jr., Stephan Bauk, William John Berry, George Edward Bickerton, Richard Martin Bienieskie, Millard Eugene Boteler (fall semester), Robert Briggs Brackbill, Richard James Carroll, Leonard Francis Ciemniecki, Richard Charles Ciento, Basil Lincoln Ciriello, Richard Clayton Claypool, Ted Paul Colna, Arthur Gerald Cotter, George Dancu, Thomas Emanuel Daniels, Paul Davies (spring semester), Ronald Arthur Dearden, Louis John Demofrio, Jr., Michael Ennis, Kenneth Wayne Eriksson, William Albert Fackler, Robert Joseph Fruia (spring semester), Martin Thomas Gallacher, Richard Joseph Gaspard, Richard Porter Giesler, Francis Joseph Gleason, Robert William Goodwin, Eugene Michael Guarella, Francis Bernard Harding, Jr., Alvin Dwayne Hankeland, John Frank Henzes, Donald Charles Herman, James Merwyn Hill, Joseph Francis Hince, Jesse Oscar Hinshaw, Jr., Marion Elwin Hoar, James Anthony Holtzer, Joseph John Holup, Robert Anthony Jewett, John Gilbert Jolly, John Paul Keen, Jack Edward Kesock, George John Klein, Samuel Ralph Kussier, Jr., Harry Patrick Kober, Jr., Frank William Kovacs, Saul Eugene Liebowitz, Theodore Raymond Leneski, David LeRoy Liddick, Ray Michael Lowney, Howard Victor McDonald, William Parke McHenry, Jr., James Edward Manning, Ronald Peter Matalavage, Eldon Stiles Miller, Jr., Raymond Wayne Murray, Nathan James Nadden, Anthony Thomas Nardone, James Edward Peake, Theodore Bachly Pearson, Joseph Francis Peteavich, John Joseph Pasta, Leo Robert Prostko, Herbert Roy Rappaport, Robert David Reid, Donald Frederick Rhine (spring semester), Wayne Joseph Rinick, Paul Vincent Rusnak (fall semester), William Manning Russell (spring semester), Edward Steven Rutsch, John Franklin Saffer, Edward Charles Sakach, Irving Sammy, Robert Joseph Shuba, Samuel Paul Sirkis, George Andrew Solack, Michael Sander Sommer, Lawrence William Spellman, Peter James Spera, Robert Lee Sturm, Robert Gerald Sutton, Robert Lawrence Sweeney, Jack Kershaw Tarr, William Eugene Telasky, Myles Paul Thompson, William David Tomeykowski, Arnold Jay Trasen, Roger Wickersham Turner (spring semester), Robert Daniel Vagot, John Richard Vaile, Ado Valge, Orville Wray Varley, James Henry Wagner, Stanley Walowac, Cornelius Francis Walsh, William Milton Weaver,

Vernon Wesley Yates, Richard Allen Young, Richard Wayne Young, Carl Eugene Zaleski

The William Walker Scholarship: John Alan Russell
The John Withington Scholarship: Marilyn Glazer
The Ellen Woodruff Scholarship: Priscilla Taylor Palmer
The Zonta Club Scholarship: Brigitte Klara Buchmann

PRIZES

1955–56

Alpha Chi Sigma Freshmen Awards in Chemistry: Violet Ella Bowen, Donald Overton Castell, David Hirsch Fram
Alpha Chi Sigma Senior Award in Chemistry: Maya Pasbo
Alpha Delta Pi Award in Scholarship and Leadership: Beverly Spaulding Borden
Alpha Kappa Psi Award in Commerce: Judson Daland Reed
Alpha Zeta Omega Award in Pharmacy: Sylvia Lee Zuber
American Institute of Chemists Award in Chemistry: Howard William Stenger
Byrne Thurtell Burns Award in Organic Chemistry: Maya Pasbo
Martin L. Cannon Memorial Award in Pharmacy: Marvin Levy
Chi Omega Award in Social Sciences: Gilda Joyce Winegard
John Henry Cowles Awards in Government: Judson Daland Reed, Betty Jane Thomas
DeWitt Clinton Croissant Award for an essay on drama or the theater: Sylvia Dellie Feldman
E. K. Cutter Award in English: Samuel Jay Keyser
Isaac Davis Awards in Public Speaking: Henry Francis Beaumont Martin, Herbert Joseph Gildenhorn, Suzanne Carole Bregman
Delta Zeta Award in Zoology: David Hirsch Fram
Ellsworth Award in Patent Law: William Eugene Hiller
Elton Award in Greek: Mildred Fleenor Obear
Jesse Frederick Essary Award to that student who has given promise of sound citizenship and ability in "forthright reporting" in student publications: Ernest Sigmund Auerbach
Joshua Evan III Memorial Award to that man in the graduating class who has demonstrated his signal ability in the social and political sciences and who has given promise of the interpretation of that ability in good citizenship among his fellows: John Edward Duncan
Alice Douglas Goddard Award in American Literature: Susan Haynes Harper
Edward Carrington Goddard Award in French: Julie Marilyn Jones
James Douglas Goddard Award in Pharmacy: Melvin Saxon
Morgan Richardson Goddard Award in Commerce: Judson Daland Reed
Gardiner G. Hubbard Memorial Award in United States History: Henry Bernice Jenkins
Kappa Kappa Gamma Award in Botany: Alberto Wanous Vazquez
John Bell Larner Award to that member of the graduating class of the Law School with the highest scholastic standing: Ricardo Allen Ratti
Martin Mahler Award in Materials Testing: Geeming Lin
Mortar Board Award to the woman student in the Sophomore Class having a scholastic standing of B or higher and the most outstanding record in activities: Mary Elizabeth Hoffman
Julius S. Nevraser Award in Orthopedic Surgery: Ronald Harlan Woody, Jr
Omicron Delta Kappa Award to that member of the Senior Class who, throughout his course, has done the most constructive work in student activities: Richard Joseph Sincoff

John Ordronaux Awards to the first- and second-year full-time students in the Law School who have attained the highest average grades: Raymond Wa... Young, James Forbes Magaw (1954-55)

John Ordronaux Award to that member of the graduating class of the School of Medicine with the highest scholastic standing: Oscar Irving Dodek, Jr.

Phi Delta Kappa Award in Teacher Education: Joe Lee King

Phi Eta Sigma Award to the beginning male student attaining the highest scholastic average in his first full semester of work: David Hirsch Fram

Phi Sigma Kappa Award to the winner in a freshman oratorical contest: Elizabe... Ellen Evans

Pi Beta Phi Award to that member of the Senior Class who, throughout her course, has done the most to promote student activities: Barbara Sillars Hen...

Pi Lambda Theta Award in Teacher Education: Dale Mortensen Thatcher

Psi Chi Awards in Psychology: Rhona Perlow Pretsky, Brian Joseph Hessler

Rudder Award in Mathematics: Edward Mosesteski

Sigma Kappa Award in Chemistry: David Hirsch Fram

Society of Colonial Wars in the District of Columbia Award in American ... History: Margaret Seaquist Ba...

James MacBride Sterrett, Jr. Award in Physics: Robert Julian Bowen

Charles Clinton Sothoron Award in Medieval History: Michael G. Kammer

Thomas F. Walsh Award in Irish History: Sandra Lee Myers

Washington Personnel Association Award for attainment in the field of Business Administration: Jackson Daland Re...

Alexander Williams Weddell Award for an essay on World Peace: Robert M... Sayre

STUDENT ASSISTANTS

June 1, 1955 to June 1, 1956

Accounting: Gerald Roy Aronson, Frederick Easton Gillum, Donald Elliott Gl... man, Eugene Gary Horowitz, Jesse Albert Kaiser, Charles Keller, Jerome ... Lewis, Donald Edward Lucas (A.B.), Jerry Rettenhof, Harold Schnee, ... berg, Virginia Siemer, James Edwin Swisher, Betty Jane Thomas, Paul ... Welch, Ronald David West

Art: Jane Mildred O'Brien

Biology: Samuel Wentworth Anderson, Joseph Roger Beauregard (A.B.), Jame... Leon Garney (M.S.), Barton Paul Meyers, Robert Browning ... Sigmund Richard Pearce, John Joseph Schaby

Botany: Lavonne Hoen Richardson (A.B.), Walter Allen Shropshire, Jean ... Vivino, Joseph Francis Wesley

Business Administration: Robert Lyman Carter, Mary Alice Case, Ro... Grossman, Charles Llewelyn Hall (A.B.)

Chemistry: Lucille Alberta Anstine, Ronald Bortnick, Howard Melvin ... Julius Morton Goodman, William Randolph Hix, Howard Fred Kime, ... Lee Rucker, George Myron Sheldon (A.B.), Roger Earl Spitzer, ... Russell Wiyte

Civil Engineering: Joseph Bell, Herbert Burgoyne, Sami Khalil Jabbour, ... M. Alcalay, Jimmy Richardson, Lillian Mara Rose, James Franklin ... Jr., Michael Anthony Silvi, Jr., William Clark Stamper

Economics: Walter Lawrence Baumann, Lee Henderson Clark (A.B.), ... Alida Holman (A.B.), Dean Barrett Judd, Jr. (A.B.), Jonathan ... William Parke McHenry, Jr., Phoebe Tubman Perlman (A.B.), Susan ... Wood

Education: John Gordon Boswell (A.B.), Sandra Maria Chiostergi, Joan Louise Fenton, Lena Eloise Grear, Ann Duffey Howard (A.B.), Claire Bette Kolesna, Mary Laubros, Evelyn Matonilla Seva

Electrical Engineering: Melvin Mcland Brady, Warren Reed Crockett, Joseph Anthony Grebinskas, Norman William Guinard, Robert Hermann, Derril Conway Rohlfs (B.E.E.)

English: Judith Midgley Kirkendall (A.B.), Barbara Smith, Nancy Dodge Wilson, Elizabeth Truman Wright

Geography: Stephen Boorland, Robert Cameron Huston, Jr., James Edgar Roberson, Jane Ann Whittemore

History: Malcolm Cameron Clark, Rachel Dach, Louis Linwood Duverger Dees, Richard Hunt, David Richard Miller, Sandra Lee Myers, Deena Ruth Schorr, Anne Hopton Wallace, Nancy Wallace, Rosa Dahl Wiener

Journalism: Joan Kathryn Cassidy (A.B.), Virginia Caroline Warren

Law: William Norman Early (A.B.), Thomas Francis Greaves (A.B.), John Franklin Lee (A.B.)

Mechanical Engineering: Coe Millard Anderson, Charles Michael Bennett, Jayant Kanani, Joseph Mahler Mast, Kenneth Wayne Scott, Victor Roy Yarrow

Pharmacy: Thomas Richard Ford, Marvin Levy, Patrick Edward McGuire, Marvin Schneider

Physical Education for Men: Gayla Osna April, Morris Herbert Casper, Cecil Marvin Charles, James Merwyn Hill, Ellen Teresa Raley, Robert David Reed

Physics: Rosalind Hauk, George Cloyd Murray, David Mermod Perkins, William Woodford Willis

Political Science: Arthur Sparrow Banks (A.M.), Frances Bran, Janice Anne Carter, Carmel Cassidy, Dorothy Georgette Drake (A.B.), Andrew Warden Edson, Barbara Sillars Harvey, Thomas Page Johnson, Francis Janet Kase, John Willis Kizer (A.M.), Joan Helen Lief, Bradford William Miller, Jr. (A.B.), Priscilla Taylor Palmer

Psychology: Paul Burns (A.B.), Barbara Ann Curley, Grace Cecilia Ferrill (A.B.), Gertrude Hanzats, Loydell Jones, Carol Elizabeth Nye, Peggy Ann Stubbs, Deortes Steinkamer Wasan

Romance Languages: Frances Marble Haines

Sociology: Jo An Henry, Harriett Lee Humphrey, Linda McKay Leonard

Speech: Lenore Sue Alexander, Beverly Spencer Barden, Ruth Lyons Hoverstein, Eugene Isaak Lambert, Barbara Sinclair Schoech, Guerdon Saltonstall Trueblood, Herbert Maurice Wolf

Statistics: Joseph Henry Allen, Jr., Betty Warner Cubberley, William Holloway Goodwin, Sharlie Margery West Kovacs, Laurence George Locke, Nina Fay Nowlin, Howard Richard Roberts (B.S.), Bertie Harold Reginald Woolf (A.B.)

Zoology: Helen Constance Bonbrest Frank Elwin Gantz, Jr., William Jelks Holliman, Jr. (B.S.), Janet Lee Merrick, Jay Howard Miller Jr., Walter Albert Moreau, Luis Raul Otero Villavicencio, Sylvia Maria Schmid, Leon Gilbert Sheer, Larry Bernard Silver, Marilyn Leanne Stagner, William Frederick Thompson

STUDENTS REGISTERED

SUMMER TERM 1955

FALL AND SPRING TERMS 1955–56

A

Aabel, Bruce Collett — D.C.
Aalen, Lilva Ann — D.C.
Abarca, Mona — D.C.
Abbat, Lynda Lou — D.C.
Abbott, Frank LeRoy — D.C.
A.B. 1939, Central College
Abbott, Keith Edward — Calif
Abdulrah, Adnan Raouf — Iraq
A.B. 1948, Law College of Baghdad
Abdulla, Mahammad — India
Abel, Corinne Prevost — Va.
Abel, Elizabeth — Mass
Abel, Margaret Ann — D.C.
Abel, Mary Margaret — D.C.
Abelson, Myron Herbert — Md.
A.B. 1952, University of Connecticut
Abernathy, John Emmons, Jr. — Md
Abernathy, Wanda Lou — D.C.
Abud, George E. — Wash
Abur, Asher — Israel
Ables, Wendell Peyton — Wyo.
B.S. 1954, University of Utah
Abney, James Wesley, Jr. — Va.
A.B. 1948, University of North Carolina
Abraham, Albert Frederick — Va
Abraham, Rutland William — Calif
B.S. 1951, Loyola University of Los Angeles
Abrahams, William Henry — D.C.
Abrahamson, Erling Birger — D.C.
Abramowitz, Melvin — Md
Abrams, Blair McCracken — Md
Abrams, Sheldon M. — Calif
B.S. 1952, Carnegie Institute of Technology
Accardi, Vincent Joseph — N.J.
Acevedo, Fernando — Md.
B.S. 1953, University of Maryland
Achee, Emile Walton — Va.
B.S. 1942, U.S. Naval Academy
Acree, Henry Fellows — Pa
Ackerman, Bernice Robert — Va
B.Metal.E. 1949, Rensselaer Polytechnic Institute
Ackerman, Fred Nelson — D.C.
Ackerman, Karl Henry — D.C.
B.S. in C.E. 1953, Tri-State College
Ackerman, Sue Charlotte — N.J.
B.S. in Ed. 1954, Pennsylvania State Teachers College, East Stroudsburg
Acree, Myrtle Eason — Va
A.B. 1931, Randolph-Macon Woman's College
Acuff, John Leland, Jr. — Va
Adair, Warren James, Jr. — Pa.
A.B. 1951, University of Pennsylvania
Adam, Donald William — D.C.
Adams, Ann — Md.
Adams, Barbara — Va.
Adams, Boyce Myles — Texas
Adams, Carl Leonard — A.
Adams, Chloe Ann — Ohio
A.B. 1947, Marshall College
A.M. 1948, University of Cincinnati — D.C. Va.
Adams, Edna Earl Hussey — Ca.
Adams, George Eugene — D.C.
Adams, Geraldine Frances — D.C.
Adams, Jo Ellen — Va.
Adams, Lydia Cate — Va.
Adams, Margaret June — D.C.
Adams, Mildred Louisa — D.C.
Adams, Nancy Matson — Va.
Adams, Paul Green, Jr. — D.C.
B.S. 1952, U.S. Naval Academy
Adams, Quincy — Va.
A.B. 1941, New York University
A.M. 1944, Ph.D. 1952, American University
Adams, Ray Franklin — Pa.
B.S. 1954, Virginia Polytechnic Institute
Adams, Robert Lazenby — Va. Ga.
A.B. 1951, University of Pennsylvania
Adams, Robert Lewis, Jr. — Va.
Adamson, Ray Power — Md.
A.B. 1954, The George Washington University
Addis, Barnett Roy — D.C. W.Va. Md.
B.S. 1954, American University
Addison, Ethel Wireman — D.C.
B.S. in Ed. 1953, Madison College (Va.)
Adel, Trevor Hillel — D.C.
Adkins, Bradley Wayne — Va. D.C.
Adkins, Eugene Brady — D.C. Va.
A.B. 1941, Dartmouth College
Adkins, Lois Winifred — D.C. Va.
B.S. 1945, Wilson Teachers College
Adkins, Phyllis Jean — Va.
Adkisson, Vaughn Alleyne — D.C.
Adler, Helen Claire — D.C.
Adler, Leonard Irwin — Idaho
A.B. 1950, Hunter College
Adler, Sherman — Va.
B.M.E. 1947, College of the City of New York
Aegerter, Richard Edward — Va.
B.S. in Ag.Eng. 1948, B.S. in C.E. 1950, Utah State Agricultural College
LL.B. 1956, The George Washington University — Ohio Pa.
Agnew, Marlyn Gail — D.C. Md.
Agosti, Lindo Elmer — Fla. D.C. Md.
Agramonte, Jorge Antonio — Fla.
Agusiewicz, Henry Anthony — Va.
B.S. in P.E. 1947, A.M. in Ed. 1949, The George Washington University
Ahern, Carol Marie — Md.
Ahern, Faith — Md.
Ahlberg, Richard Charles — Md.
A.B. 1947, Wesleyan University
A.M. 1948, Columbia University

Ahlfield, George Samuel — Ill
A.B. 1954, The George Washington University
Ahmad, Ijaz-ud-din — Pakistan
A.B. 1948, University of the Punjab, Pakistan
Ahrens, Gerd Hans
Ahrens, Grace Charlotte — Md.
A.B. 1955, Peru(opia College — N.J.
Axen, Hattie Mae
Axness, Robert Bruce — D.C.
A.B. 1951, Brown University — Mich.
LL.B. 1954, University of Michigan
Aikman, Beverly Mary
A.B. 1955, Colby College — D.C.
Ailin, Phyllis H.
Aim, Viola Louise — D.C.
Ainsworth, Rowe Revere — D.C.
Airozo, Jean Corinne — Md.
B.S. 1955, Bryant College — Mass.
Aitken, Richard Lowe
B.E.E. 1953, Cornell University — Mo.
Akbarian, Mohammed
Akerman, Gaudia Eva — D.C.
Aktouzi, Tatiana — Sweden
Akrawi, Sami T. — D.C.
A.B. 1955, Washington Missionary College — Md.
Ala'ilima, Maes'eafe John — Samoa
B.S. 1955, West Virginia Wesleyan College
Ala'ilima, Vaiinupo John — Samoa
Al-Amiri, Hasson Shaker — Iraq
A.B. 1948, Higher Training Teachers College, Bagdhad
M.S. 1956, University of Michigan
Alarcon, Martha Odette — Guatemala
A.B. 1953, Wellesley College
Albi, Anthony Gregory
Albomoze, Eugene — Pa.
Albee, Edward Guternuth — D.C.
B.S. 1952, The George Washington University — Md.
Alberghini, Thomas Joseph
B.S. in Ed. 1943, College of the Holy Cross — Md.
B.S. in P.E. 1952, The George Washington University
Albert, Bernard Leon — N.J.
B.S. 1954, Franklin and Marshall College
Albright, Clayton Louis, Jr. — D.C.
B.S. 1954, U.S. Merchant Marine Academy
Albright, Louis Claude, Jr. — Va.
A.B. 1942, Birmingham-Southern College
A.M. 1951, University of Houston
Albrote, Amelia M.
Albrite, James P. — Md.
Alden, Robert Ames — Md.
Alderman, John Clement — Va.
Alderson, Mary Ann — Va.
Alderson, Wilbur Stanley — Md.
Aldhuzer, Carlton Evans — D.C.
A.B. 1953, The George Washington University — Va.
Aldridge, Kathryn Joyce
Alembik, Aaron Isaac — Va.
B.S. in F.S. 1953, Georgetown University — Va.

Alexander, Aaron David — D.C.
B.S. 1948, College of the City of New York
M.S. 1953, The George Washington University
Alexander, Albert David, Jr. — Va.
Alexander, Beverly Jane — D.C.
Alexander, David George — Va.
Alexander, David Ord — D.C.
Alexander, Dorothy A. — Va.
B.S. 1929, Pennsylvania State University
Alexander, Earl William — Ohio
B.S. 1945, U.S. Merchant Marine Academy
Alexander, Jeanne Ritchie — D.C.
Alexander, Leanne See — Va.
Alexander, Margaret Lee — D.C.
Alexander, Richard Leon — Ind.
Alexander, Thomas Goodwin — Va.
B.S. 1956, University of Maryland
Alexander, William Bruce — Va.
Alexy, Irma Gloria — D.C.
Allegde, Marie — Va.
Allen, John Bernard — Va.
B.S. 1948, Kansas State College
Allfieri, James John — Va.
Algee, Roger William — Calif.
Algee, Verrell Evelyn — Va.
Alger, Wade Sterling — Calif.
Al-Hashimi, Hassan Mahmood — Iraq
Licentiate in Law 1946, Baghdad Law College
M.C.L. 1954, The George Washington University
Ali Abdul Munim A. J. — Iraq
A.B. 1951, American University of Beirut
M.B.A. 1954, Stanford University
Alicks, Charles William — N.J.
Allan, Patricia Ryan — Va.
A.B. 1944, Wellesley College
Allbaugh, Roy Durrell — Va.
A.B. 1938, The George Washington University
Alleman, Rodger Neal — Mo.
A.B. 1951, LL.B. 1955, University of Missouri
Allen, Albert Conner — D.C.
A.B. 1786, The George Washington University
Allen, Audrey Cecilia — Md.
Allen, Barbara Joan — Conn.
Allen, Diana — Va.
A.B. 1945, Hunter College
A.M. 1947, Bryn Mawr College
Allen, Dorothy Mack — Md.
A.B. 1945, Howard University
Allen, Edward Clayton — Md.
A.B. 1948, Gettysburg College
Allen, Ida Mosher — Va.
Allen, John III — Va.
Allen, Joseph Henry, Jr. — D.C.
Allen, Judith — D.C.
Allen, LaVerne — Ill.
Allen, Mary Alice — N.C.
Allen, Peter Howitt — D.C.
Allen, Phyllis Eidenson — Va.
Allen, Richard Comfort — N.Y.
A.B. 1951, Knox College
Allen, Robert Brooke — Md.
A.B. 1951, The George Washington University
Allen, Rosetta Marie — D.C.

Allen, Scott — Va.
A.B. 1956, The George Washington University

Allen, Sidney — Va.
B.S. in C.E. 1942, Michigan College of Mining and Technology

Allen, Vera Ann — Wash.

Alexander, Thomas — Va.

Alexander, William Eugene — D.C.

Allgaier, Nancy Lucas — D.C.

Allsopp, Robert Edward — Va.

Alsop, Anne Pendilla — D.C.

Alston, Lewis Jay — D.C.
A.B. 1941, Brooklyn College

Alsopp, Mariam — Fla.
A.B. 1952, University of Maryland

Altwein, Joseph Leo — D.C.
A.B. 1951, University of Maryland

Altmine, Robert Thomas — D.C.

Alm, Carleton Frederick — Md.
LL.B. 1938, The George Washington University

Almallah, Movassar Yahia — D.C.

Alofs, Chester — Va.
A.B. 1946, Marquette University

Alper, Robert Marion — Pa.
B.S. 1954, University of Pennsylvania

Alpert, Lawrence Jay — D.C.

Alrick, Helen B. — Va.

Al-Samarrie, Ahmad Mustafa — D.C.
B.S. 1953, University of California

Alsop, Claud A. — Md.
B.S. 1954, University of Maryland

Alster, Corinne Helen — D.C.

Alston, Ernestine — D.C.
B.S. 1956, Miner Teachers College

Alston, Percy Leon — D.C.
B.S. 1951, St. Augustine's College

Alt, Theodore Raymond — D.C.
B.S. 1950, Northern Michigan College of Education

Alterman, Toby Thelma — Md.

Altizer, Florence Mae — W.Va.

Altman, Ruben — Va.

Altmann, Bernhild —
A.M. 1944, University of Chicago
Ph.D. 1021, University of Freiburg

Altomare, Philip Martin — D.C.

Altpeter, Lawrence Lester, Jr. — N.Y.
B.S. 1954, Manchester College

Alvarez, Roberto Williams — D.C.

Alvey, Olney Henry — Va.
B.S. 1951, The George Washington University

Alwan, Mohamed Hussein — D.C.
A.B. 1948, American University of Beirut

Aly, Mohammed Kassem — N.Y.

Alonza, Esperanza Cornejo — Philippines
A.B. 1950, A.M. 1953, Far Eastern University, Manila

Amblod, Donald Theodore — D.C.

Amdur, Lenore Lois — D.C.

Amdur, Thomas — D.C.
A.B. 1951, Brooklyn College

Ames, Barbara Anne — Va.

Ames, Emma Frances — D.C.

Ames, Lawrence Lucien — Va.

Ames, Richard Gallion — Va.

Ames, Sarah Jane — Va.
B.S. 1016, Alabama College

Amick, Vern Francis — D.C.

Amico, Mario Joseph — Conn.
B.S.E. 1954, University of Connecticut

Amara, Abdel Rezzak Youssef — D.C.

Amtower, Arthur Theodore — Md.
B.S. in Ed. 1952, Maryland State Teachers College, Frostburg

An, Bui Quan — Vietnam

Anders, Wilhelm Karl Friedrich — Md.
A.B. 1941, Haverford College
A.M. 1952, University of Maryland

Andersen, Barrett Christian — Calif.
A.B. 1951, San Jose State College

Andersen, Stephen Foss, Jr. — Md.

Anderson, Alice Champ — Pa.

Anderson, Allan William — D.C.

Anderson, Arthur James — Md.

Anderson, Billy Don — D.C.

Anderson, Blanche Arvetta — Va.

Anderson, Byron Samuel — D.C.

Anderson, Coe Millard — La.

Anderson, David Richard —
B.S. 1956, Howard University

Anderson, Donald Kinnear — Ohio

Anderson, Don Rawley — D.C.
A.B. 1952, Yale University

Anderson, Donald Theodore — W.Va.

Anderson, Dorothy Shippey — Va.
A.B. 1955, Shepherd College

Anderson, Evan Drexel — Md.
A.B. 1927, Randolph-Macon Woman's College

Anderson, Floyd Edgar — D.C.
B.S. 1948, Upsala College

Anderson, Frank Robert — Md.
B.S. in E.E. 1940, Illinois Institute of Technology

Anderson, Garson P. — Ill.
A.B. 1952, Washington State College

Anderson, George William, Jr. — Md.

Anderson, Helen Georgia — D.C.

Anderson, Hiram Sybil — Tenn.

Anderson, Jewel LaVerne — Va.

Anderson, John Donald — D.C.
A.B. 1948, College of William and Mary

Anderson, John Ford — N.C.

Anderson, Kenneth George — Mass.
A.B. 1953, University of North Carolina

Anderson, Lou Ernest — Md.

Anderson, Norvell Richard — Va.

Anderson, Richard Gardner —

Anderson, Richard Howard — D.C.

Anderson, Rudolph University — Md.
B.S. 1952, Rutgers University

Anderson, Samuel Wentworth —

Anderson, Thomas Moore, Jr. — D.C.
A.B. 1951, University of Maryland

Anderson, Vivian Mae — Va.
B.S. 1936, Lincoln College — Conn.

Anderson, Wayne Russell —

Anderson, William Roger — D.C.
A.B. 1951, Stanford University

Anderson, William Howard — D.C.

Anderson, William Paul — Va.
B.S. 1955, State University of Iowa

Anderson, Willis Paul —

Andrews, Russell LeRoy — Iowa
B.S. in M.E. 1941, Iowa State College of Agriculture and Mechanic Arts — Ex.

Andrassett, Cleo Elaine — D.C.

Andrews, Alfred Kenneth —

Andrews, Forrest —

Andrews, James Nathan W Va.
B.S. in Ed. 1953, West Virginia University
A.M. in Ed. 1955, The George Washington University
Andrews, John Nelson, Jr. Va
A.B. 1949, University of Maryland
Andrews, Mary Catherine Md.
B.S. 1943, Ohio State University
M.S. 1947, New York University
Andrews, Norma Stephan
Andrus, James D.C
B.S. 1952, M.S. 1955, Massachusetts D.C
Institute of Technology
Andrusko, Charles Paul
Angerman, Lorraine Verrone D.C
Angel, Donald William S.D
Angel, Lillian Crane Va
Angle, Lucretia Montague D.C
A.B. in Ed. 1938, A.M. in Ed. 1942, D.C.
The George Washington University
Ankers, John Edward
Annarino, Rachael Joy D.C
Annas, Helen Woodburn Va
B.S. 1939, Mary Washington College Md.
A.M. in Ed. 1954, The George Washington University
Annaka, Megan
Annand, Robert James D.C
Annarino, Lucille Alberta D.C
Anschutz, Josephine Eschauer Pa
A.B. 1938, Columbia College (S.C.) D.C
Antonsen, Mary Louise
Antosh, Edward Joseph D.C
Antosh, Henry Joseph Pa
Apanovitch, Nellie Mary Md
Apelt, Bernice Pela D.C
Apolonio, Angelo Henry Va.
Appel, Jean Slater D.C
A.B. 1925, Vassar College D.C.
A.M. 1931, Columbia University
Appel, Marion Ann
Appenzeller, Donald D. D.C
Appenzeller, Ann N.M
Appenzeller, William Vale Calif.
A.B. 1955, University of California Calif.
Appenzeller, William Gordon D.C
A.B. 1955, The George Washington University
Appleyard, Lois Jane
Aprea, Gloria Ocea
Apstein, Marianne D.C
B.S. 1952, College of the City of New York Md.
Apter, Mildred
Apter, Ronald Alan
Arango, Rosario D.C
Archer, Harold Oliver D.C
Archer, John Marcus D.C
Archer, Mary Anne D.C
A.B. 1955, Wake Forest College Va
Arent, Irene Mary
Argent, Russell Henry N.Y.
A.B. 1952, Washington Missionary College D.C
Argyropoulos, Demetre Archie
Argyropoulos, Max Paulette Greece
Arima, James Kazuo Greece
A.B. 1949, University of California at Los Angeles D.C
Arista, Henry
Arlesa, Russel Anthony Pa
Armbruster, Wilbur Rollin N.Y.
Va

Armistead, Mary Ann D.C
Armstrong, Dixie Fredrick Va
Armstrong, James Edward Va
LL.B. 1943, University of Miami
Armstrong, Jasper Hutchinson, Jr. Md
B.S. 1952, University of Maryland
Armstrong, Robert Charles Minn
B.S. 1952, University of North Carolina
Arnaud, Ronald Bryant Md
Arnett, John Alan Va
A.B. 1953, The George Washington University
Arnett, John Leslie Ky
Arn, Helen Gail Md
Arnold, Barbara Iona Conn
Arnold, David Lee Wis
B.S. 1945, U.S. Military Academy
Arnold, Donald Keogh Va
Arnold, Dorothy D.C
B.S. in P.H.N. 1950, University of Michigan
Arnold, Gretchen Louise D.C
Arnold, Margaret Va
Arnold, Peggy Noble Ill
Arnold, Sharon Ann Va
A.B. 1954, Whitman College
Arny, Jane Ewan Va
Arow, Mary Louise Va
Arrowsmith, Edgar Donald Va
Arrowsmith, Linda Stoller D.C
Arrowsmith, Gregory Ray D.C
Arrowsmith, Marion Hamlet Panama
B.C.L. 1944, Tri-State College
Arrick, Anna Arlene Ohio
Arrott, Nicholas Payne Va
A.B. 1950, Lynchburg College
Arruda, Clara Josepha Md
Arsenault, Paul Elmore D.C
B.E.E. 1950, Marquette University
M.E.E. 1951, Harvard University
Arsenault, Estelle
Arthur, Howard Edgar D.C
Arthur, John Joseph D.C
Arthur, John Joseph N.J
A.B. 1952, The George Washington University
Arthur, Robert James, Jr. Va
A.B. 1954, University of Scranton
Asare-Lartey, Lewis Richard Gold Coast
B.S. 1951, Howard University
Ash, James Oliver Ariz
Ashburn, Frances Walker Md
B.S. in Ed. 1926, Mary Washington College of University of Virginia
Ashbury, Mary Lee D.C
Ashby, Dean Calif
A.B. 1944, University of Iowa
Ashby, Wallace Leslie Va
A.B. 1947, The George Washington University
Ashe, Edward Paul D.C
Ashmore, Jenny Ann Md
Ashton, Gwendolyn Barbara Md
Aspinall, Lloyd Calvin D.C
Aspinwall, Alexander Va
Assenmacher, Marguerite D.C
A.B. 1928, A.M. 1932, The George Washington University
Atchison, Wilson Preston D.C
Atherholt, Charles Leavitt Mo
A.B. 1950, University of Missouri
Atest, Patricia Carol Md
A.B. 1955, Frostburg College
Athey, Bessie Lee D.C.

Atkeson, John Conner, Jr. — Va.
Atkin, Sidney Thomas — Md.
Atkins, Constance — Md.
Atkins, Griswold Terry — Conn.
Atkins, John Thurrell, Jr. — Va.
B.S. 1942, North Carolina State College
A.M. 1949, The George Washington University
Atkinson, Polk Johnson — Va.
A.B. 1914, Southwestern at Memphis
Atkinson, Robert Wharton — Va.
A.B. 1952, Haverford College
Atkinson, Wallace Lippincott, Jr. — Wash.
A.B. 1936, University of Washington
Atlas, Dean Niyazi — Md.
Atlas, Ravil — Md.
Atwood, Martha Louise — N.Y.
A.B. 1951, University of Vermont
Avila, William Vincent — D.C.
B.S. 1955, The George Washington University
Auerbach, Ernest Sigmund — Md.
Auerbach, Jack — Pa.
Aughenbaugh, Dustin Marne — Ohio
B.C.E. 1947, University of Tennessee
Augustine, Joseph Patrick — Va.
Aulisio, Gerald Joseph — Mass.
August, Larry G. — Pa.
Ausbeck, Paul James — Ind.
B.S. 1952, Purdue University
Austin, Carroll Wayne — N.C.
A.B. 1953, The George Washington University
Austin, Charlie Bo — D.C.
Austin, Edwin Cornell — Va.
Austin, George Kenneth — N.J.
Austin, J. Dean — Md.
B.S. 1947, M.S. 1948, University of Pittsburgh
Austin, James Albert — Ariz.
A.B. 1952, University of Southern California
Austin, James Monteith — Kans.
Austin, Mirella Savage — Va.
B.S. 1948, Maryland State Teachers College, Salisbury
Austin, Phebe Jane — N.J.
Austin, Phelps Beachear — Pa.
A.B. 1945, Pennsylvania State University
Austin, Robert Earl — Pa.
B.S. in E.E. 1950, Pennsylvania State University
Austin, Virginia LaRose — Ill.
B.S. 1951, DePaul University
A.M. in Ed. 1954, University of Maryland
Austin, Wayne Henderson — Mo.
Auth, Eileen Anna — Ill.
Auwaerter, Richard Francis — N.Y.
A.B. 1951, Columbia University
Avery, Alan Joseph — Va.
Avila, Armando — Costa Rica
Avin, Marion — N.Y.
B.S. 1934, Brooklyn College
LL.B. 1937, Harvard University
Avin, Alan Sanford — Md.
Axelrod, Julius — Md.
B.S. 1933, College of the City of New York
M.S. 1941, New York University
Axman, Henry George — D.C.
Axtell, Carolyn Louise — Va.

Ayalon, Nakhum — Israel
Ayers, Jack Floyd — Va.
B.S. 1947, U.S. Naval Academy
Ayers, Reginald Lee — Md.
B.S. 1952, Bowling Green College of Commerce
Aylaian, Arsen — Ky.
Azar, Jose Oscar — Pa.
Azerbevani, Fereydoun — D.C.
Azpurua, Leopoldo — Venezuela
Azrin, Victoria B. — Md.
A.B. 1953, Boston University

B

Babb, George Winslow — D.C.
Baber, John Ralph — Va.
Babst, Edward Ralph — Md.
Bacalman, Deena Shirley — D.C.
Bachman, John David — Nebr.
Bachman, Joseph Fred — Md.
Bachmayer, Katherine Annette — D.C.
Backus, Edith Gisela — D.C.
Backus, Olga Elizabeth — D.C.
Backus, Paul Milford — D.C.
B.S. 1954, American University
Baczynskyj, Tamara — D.C.
Bader, Dominic Joseph — D.C.
Bader, Albert Adolph — D.C.
Bader, Joseph Marvin — Md.
Bader, Robert M. Clermand — Ill.
B.C.E. 1951, Ohio State University
Baechler, Donald O. — Va.
Baehr, Ralph Henry — D.C.
Baer, Edward Frazier — Md.
B.S. 1951, University of Illinois
Baer, John Wilbur — N.J.
A.B. 1952, Harvard University
Bagan, Michael — D.C.
Bagares, Elvira Rebecca — Va.
B.S. in Ed. 1952, M.L. Quezon University (Philippines)
Bagby, Eula Dotte — D.C.
B.S. in Ed. 1944, University of Virginia — Va.
Bagenstos, Anne Cordelia — Va.
Bagwell, Daniel Bottrell — Va.
Bagwell, Ellie Lou — Md.
B.S. in Ed. 1928, Georgia State College for Women
Bahamonde, Demetri Stancho — Va.
Bahn, Anita — Md.
A.B. 1949, Hunter College
Bahr, Clarence Leo, Jr. — Va.
Bailey, Aubrey William — Md.
Bailey, Beecher James — D.C.
Bailey, Carol Gilbert — D.C.
Bailey, Donald Clayton — D.C.
Bailey, Kenneth Holmes, Jr. — D.C.
Bailey, Roy A. — N.Y.
A.B. 1951, Brown University
M.S. 1954, Cornell University
Baillie, David Gemmell III — Pa.
A.B. 1954, Yale University
Baily, J. Edgar — D.C.
A.B. 1950, University of Pittsburgh
Bain, Clara Marie — Ga.
Baine, Herman Hershel — D.C.
B.S. 1952, University of Alabama
Baird, Lawrence Idris — D.C.
B.S. in E.E. 1949, U.S. Naval Post Graduate School
Baird, Ray Alva — Va.
A.B. 1947, University of Richmond

Baisinger, Grace Chepulis D.C.
A.B. 1952, The George Washington University
Bajandas, Mario Enrique D.C.
B.M.E. 1960, Catholic University of America
Bakanas, Victor Edward Conn.
B.S. 1957, U.S. Coast Guard Academy
Baker, Albert Cannon Pa.
Baker, Annette Cann D.C.
B.S. in Ed. 1940, New York State Teachers College, Buffalo
A.M. in Ed. 1951, The George Washington University
Baker, Arden
Baker, Benjamin Harrison D.C.
B.S. 1952, University of Maryland Md.
Baker, Bessie Louise
Baker, Betty Edmunds D.C.
Baker, Carol Lee D.C.
Baker, Charles Calvin Va.
A.B. 1952, Pennsylvania State University Md.
Baker, Donald Faris
Baker, Edward Welsh Ind.
A.B. 1952, A.M. 1953, The George Washington University Md.
Baker, Elrod Douglas
Baker, Franklin Haines Va.
Baker, Harold David D.C.
Baker, Harold Leon Va.
Baker, Henry Dennison Tenn.
Baker, Johnnie Carson D.C.
Baker, Lennox William D.C.
B.S. 1953, Creighton University Va.
Baker, Patricia Ann
Baker, Raymond Nicholas Md.
B.S. 1946, U.S. Naval Academy D.C.
Baker, Robert Edward
B.S. in Ed. 1932, New York State Teachers College, Buffalo D.C.
A.M. in Ed. 1954, Canisius College
Baker, Ruth Norberg of America
Baker, Sylvia Faye Va.
Baker, Thomas Glenn Md.
Baker, Webster Lee Md.
Baker, William Clinton Pa.
A.B. 1942, A.M. 1950, The George Washington University D.C.
Bakker, Sybe Kornelis
Baker, Hilda
Balaouf, Barbara Ann Md.
Balavoine, Manuel Iraq
Balcom, Bernell Elwyn Nicaragua
Baldwin, Charles Adams Calif.
A.B. 1950, The George Washington University Md.
Baldwin, Helene
A.B. 1941, McGill University Md.
Baldwin, John Arthur
B.S. 1951, Scranton University D.C.
Baldwin, Nelle Marie
Baldwin, Shirley Lee Kans.
B.S. 1955, University of Wisconsin D.C.
Baldwin, Virginia Arand
B.S. 1948, A.B. 1951, University of Connecticut D.C.
Balin, Ronald Beard
Ball, Joseph James N.Y.
Ball, Stuart Michael Md.
A.B. 1935, Lafayette College D.C.

Ballard, Jennings Fletcher Md.
A.B. 1942, East Carolina Teachers College
A.M. 1947, Columbia University
Ballard, Leo D.C.
Ballenger, Willis Jerome D.C.
Ph.B. 1924, Yale University
Ballmann, Francis Xavier Ky.
B.S. in F.S. 1948, Georgetown University
Ballog, Ronald Clinton Conn.
B.S. 1954, University of Connecticut
Ballowe, Mary Nolan D.C.
Balodemas, Chris D.C.
Balogh, Margaret Melegh D.C.
Balsam, Everett N.J.
A.B. 1950, New York University
Balster, Vernon Henry Ill.
A.B. 1947, Concordia Seminary
A.B. 1955, The George Washington University
Baldrop, Nathaniel Recardo D.C.
Baltimore, Charles H D.C.
A.B. 1931, Howard University
A.M. 1941, New York University
Baltins, Arturs Edgards Md.
Certificate 1939, Latvia Law School
Balukevich, James Joseph N.H.
Bass, George Albert Va.
Bast, Dirk Van D.C.
Bastl, Marlene Eugene D.C.
Batchelor, William Landon Md.
A.B. 1954, Princeton University
Batchuk, Connie Bessie D.C.
A.B. 1952, Meredith College
Batcko, Andrew Va.
Batcko, Arthur Sparrow D.C.
A.B. 1951, Cornell University
A.M. 1954, The George Washington University
Batcks, Gary Frank Va.
Batcks, Isaac M D.C.
B.S. 1950, Agricultural and Technical College of North Carolina
Batcke, Vincent Hudson Va.
Batcks, Wilhelmina Bright D.C.
A.B. 1948, Howard University
Batcning, Bessie Cramer Md.
B.S. 1924, Georgetown University
Batcta, Johnny Water, Jr. Fla.
Batcta, Joseph Harry, Jr. D.C.
Batcyn, Irene B Md.
Batta, Zygmund John Mass.
B.S. in E.E. 1949, University of Rochester
Batcttt, James Carrol D.C.
Batchoc, Warren Eugene D.C.
Batchoc, Frank David Mass.
A.B. 1954, Mississippi Southern College
Batchoc, James Joseph Pa.
Batchoc, LaZelle Cooper Texas
B.S. 1943, East Texas State College
Batchoc, Lenna
Batchoc, Mary Alice Fla.
Batchoc, William Clifford Okla.
A.B. 1952, The George Washington University Va.
Batchot, Cecile Marie
Batchour, James LeRoy D.C.
Batchour, Jeanne Rocke Va.
B.S. 1948, Maine Teachers College D.C.
A.M. 1949, New York University

Bates, Wesley Dale — Minn
Batesander, Frances Rose — D C
A.B. 1948, The George Washington University
Bates, Jack Lee — Ohio
Bathurst, Thomas William — Va.
B.S. 1949, Virginia Polytechnic Institute
Batiste, Janine Anne Marie — D C
Batkanin, Michael George — Pa.
Batson, Paul Rudolf — Va.
B.S. 1952, Roanoke College
Batkin, Robert Allen — D C
Batkley, Thomas W — N C
Batley, Warren Eash — D C
Batlin, Shirley — Va.
Battaglia, Gloria R — Md.
Battaglia, LeRoy Hanson, Jr. — Va.
Battaglia, Ralph Rocco — Va.
B.E.E. 1949, Cornell University
Battaglia, Donald Frederick — D C
Battaglia, Gerald Douglas — Md.
Battaglia, Howard Freeman — Md.
B.S.E. 1953, University of Florida
Battaglia, Jean Mary — D C
Battaglia, Kenneth Clark — D C
Battaglia, Lawrence Alman, Jr — Va.
Battaglia, Marguerite Ione — Va.
Battaglia, Martine Elliott — Va.
A.B. 1952, Harvard University
Battaglia, Milton Julius, Jr. — D C
Battaglia, Norma — Md.
A.B. 1953, University of Michigan
Battaglia, Raymond Van Dyck — Md.
Battaglia, Richard Edward — D C
B.S. 1951, Maine Teachers College
A.M. 1952, Columbia University
Battaglia, Thomas Owens — Tenn.
Battaglia, William Dale — Va.
Battaglia, Theodore — D C
Battenfield, Charles Lee — D C
Battenfield, Clarence Paul — Md.
A.B. 1950, Lebanon Valley College
A.M. in Ed. 1951, University of Maryland
Battenfield, James William — Md.
Battenfield, Barbara Theresa — D C
Battenfield, Thomas Edward — Va.
B.S. 1950, Louisiana Institute of Technology
Battenfield, Julia Wallace — Conn.
A.B. 1950, Yale University
Battenfield, Marion Augusta — D C
Battenfield, Theodore Joseph — N H
Battenfield, Rosalina Maria — Cuba
Battenfield, Richard Penn — D C
A.B. 1948, M.D. 1948, University of California
Battenfield, Rose Fae — D C
Battenfield, Samuel Benjamin — D C
Battenfield, Rosalie Garland — Texas
Battenfield, Edward I — Md.
Battenfield, George Dixon — Va.
B.S. 1951, Longwood College
Battenfield, Marion Ann — Pa.
Battenfield, Francis Thomas — Md.
A.B. 1952, Duke University
Battenfield, John Paul — Md.
Battenfield, Anita Mae — Md.
B.S. 1949, Pennsylvania State Teachers College, Bloomsburg
A.M. 1951, The George Washington University

Battenfield, Donald Raymond
Battenfield, Emanuel Joseph
Battenfield, James Bruce
Battenfield, John Cornelius
Battenfield, John William
Battenfield, Marion
Battenfield, Robert Rose
A.B. 1950, A.M. 1952, University of Michigan
Battenfield, Donald Michael
Battenfield, Willis Woodward, Jr.
Battenfield, Barbara Helen
A.B. 1941, College of the Holy Cross
Battenfield, Margaret Elizabeth
Battenfield, Nicholas J.
Battenfield, Rebecca Arlene
Battenfield, Robert Keegan
Battenfield, Larry Alfredo
Battenfield, Jon John
Battenfield, Kathleen Margaret
Battenfield, Richard James
B.M.E. 1953, Maritime College (N.Y.)
Battenfield, Carl Warren
B.S. 1942, M.S. 1943, Purdue University
M.P.H. 1952, University of North Carolina
Battenfield, Marcia Colette
Battenfield, Eugene
Battenfield, Edward A.
B.E.A. 1939, Ed.M. 1940, Boston University
Battenfield, Victor A., Jr.
Battenfield, Virginia Dorothy
A.B. 1947, Salem College
Battenfield, Vincent James, Jr.
Battenfield, John Anthony
Battenfield, Alan Brent
A.B. 1951, University of California at Los Angeles
Battenfield, Donald Edward
Battenfield, Robert Bruce
Battenfield, Robert Gates
Battenfield, Sara Ellen
Battenfield, Irma Norman
B.S. 1934, Western Reserve University
Battenfield, John Pennell, Jr.
Battenfield, Russell Jesse
Battenfield, Atwood Stanley
Battenfield, James Henry, Jr.
Battenfield, Edmund Lionel
B.S. 1950, U.S. Merchant Marine Academy
Battenfield, Samuel Leon, Jr.
B.S. in Ch.E. 1955, Drexel Institute of Technology
Battenfield, Anthony John
Battenfield, Anthony Stephen
Battenfield, John William
B.S. 1950, Kansas State College
Battenfield, Linda Lee
Battenfield, Abraham S.
B.S. 1950, College of the City of New York
Battenfield, Earl Jay
A.B. 1949, Catholic University of America
Battenfield, John Roy
B.S. 1951, U.S. Naval Academy
Battenfield, Norman Leo
Battenfield, Mary Jo
Battenfield, Helen Ann

Bastacky, Stanley Norman — Pa.
B.B.A. 1951, University of Pittsburgh
Bastian, James Harold — Mo.
B.S. 1950, University of Missouri
Bastian, Mary Jean — Mo.
A.B. 1951, The George Washington University
Bastl, Ferdinand
Batarseh, Mansour Saad — D.C.
A.B. 1952, American University at Cairo, Egypt — D.C.
Batchelder, John Gardner — Va.
B.S. 1950, University of New Hampshire
Batchelder, Roger P. — Va.
B.S. 1950, B.S. in E.E. 1950, Clarkson College
Batchelor, Alonzo William — N.Y.
Bates, Pattison Astley — D.C.
Bates, Willie Lee — Ala.
Bath, Constance Longley — Va.
Batier, Helene A. — Nev.
A.B. 1944, University of Nevada
Batory, Daniel John — Md.
A.B. in E.E. 1952, King's College
Battah, Sabah el Din, Aly — Egypt
A.B. 1953, American University at Cairo, Egypt
A.M. 1954, The George Washington University
Battey, Philip Everett
Battison, Margaret Cicely — Va.
A.B. 1942, Wellesley College — Md.
A.M. 1948, Columbia University
Baturis, Richard Harvey
Bau, Deaetsa — D.C.
Bauer, Edward Victor — D.C.
Bauer, Frederick Arthur — Va.
Bauer, George Wendell, Jr. — Va.
Bauer, Richard — Calif.
Baughman, Imerial Emilie — D.C.
Baumber, Eleanor Dean — Md.
Baumgartner, Kenneth Owen — Ala.
Bauk, Stephen — Va.
Baum, Edgar Carter — N.J.
A.B. 1955, Western Maryland College — Md.
Baumann, Walter Lawrence
Baumgardner, Pearly Lorenzo — D.C.
A.B. 1927, University of North Carolina — Va.
Baute, Eloise Dorothy
Bauer, Robert — Mo.
B.E.E. 1947, University of Florida — Va.
M.S. in E.E. 1949, Massachusetts Institute of Technology
Baxter, Allen Preston
A.B. 1952, University of Virginia — Va.
Baxter, Charles Sayre, Jr. — D.C.
Baxter, David Louis — Md.
A.B. 1933, St. John's University (N.Y.)
Baxter, Floyd Richard — Va.
Baxter, Robert John — Ohio
A.B. 1941, University of California
M.S. 1951, Ohio State University
Bay, Julia H.
Bayauf, Homer Marshall — Md.
B.S. 1949, Lynchburg College — Va.
Bayer, Frederick Merkle — Fla.
B.S. 1948, University of Miami
M.S. 1954, The George Washington University
Bayes, Harold Eugene — D.C.

Baylies, Sofronia Fielding — D.C.
Bayliss, Marianne Catherine — Va.
Baynor, William Francis, Jr. — Va.
A.B. 1942, University of Richmond
Bayz, Constantine Harry — Md.
Beach, Robert Andrew — Mich.
B.S. 1954, University of Maryland
Beacham, Joy Katherine — Va.
A.B. 1947, The George Washington University
Beale, David Anthony — Va.
Beattie, Nancy Blandford — D.C.
Beers, David Emerson — Utah
B.S. 1954, University of Utah
Bear, Elwood LeRoy, Jr. — Va.
Beard, James Orin — Va.
Bearden, Bowan Donald — Ala.
Beatup, Judith — D.C.
Beary, Alexander David, Jr. — Md.
B.E.E. 1948, Manhattan College
Beasley, Elizabeth Shelt — D.C.
Beasley, Lola Jeanetta — D.C.
A.B. 1943, Howard University
A.M. 1947, Catholic University of America
Beasley, Lucius Scales — Va.
Beasley, Mary Jane — Va.
Beasley, Ruth Elaine — Md.
Beatt, Phoebe Carter — D.C.
A.B. 1912, Lees Kentucky State Teachers College
Beaton, Robert Eden — Md.
B.S. 1942, University of Maine
Beaty, Orren, Jr. — Ariz.
A.B. 1940, New Mexico College of Agriculture and Mechanic Arts
Beatty, John Van Ohsen — Va.
Beauchamp, Howard Irving — Md.
Beauchamp, Glenda Clare — Va.
Beauchamp, Kenneth Craig — Alaska
Beauregard, Joseph Roger — Va.
A.B. 1952, University of Vermont
Beauregard, Pierre Gustave Toutant — D.C.
A.B. 1947, University of the South
Bebo, Sue Ann — D.C.
Bechhoefer, Arthur Scharfeld — D.C.
Bechtel, Charles Haden — Pa.
Bechtel, Gene Arlan — Kans.
B.S. 1954, McPherson College
Bechtoldt, Cletus Joseph — Md.
B.S. 1950, The George Washington University
Beck, Henry Donald — D.C.
Beck, Ira Thomas — Ind.
A.B. 1938, DePauw University
Beck, Linda Jane — D.C.
Beck, Robert Joseph — Va.
Beck, Samuel — N.J.
A.B. 1955, New York University
Becker, Arlene Berlin — Md.
A.B. 1948, The George Washington University
Becker, Brian Lester — D.C.
Becker, David Leonard — Fla.
B.S. 1951, Florida Southern College
Becker, Doris Jean Morgenthal — Pa.
Becker, Earl Franklin, Jr. — Md.
B.S. 1951, Muhlenberg College
Becker, John Benedict — Iowa
B.S. 1952, Iowa State College

Becker, Robert Howard — N.Y.
B.S. 1951, College of the City of New York
LL.B. 1954, Yale University

Becker, Rolland Wayne — Ind.

Beckett, Emma Virginia — Calif.

Beckett, William Wade — Fla.
B.C.E. 1918, The Citadel

Beckman, Carlton Berry — D.C.

Beckman, Eleanor Rosanne — D.C.

Beckman, Kenneth Lee — Ill.

Beckmann, Victor Rudolph — Md.
B.S. 1952, University of Wisconsin

Beckmann, Arthur Henry — N.J.
A.B. 1952, Columbia College (Ill.)

Beckwith, John Quinton — Va.

Beckwith, Marion Casey — Md.
A.B. 1940, Rhode Island School of Education
A.M. in Ed. 1955, The George Washington University

Beckwith, Rhea Jean — Md.
A.B. 1952, Washington Missionary College

Bedford, Dolores Nancy — Md.

Bedford, Antonette Marie — D.C.

Bedford, Julius Ludwig, Jr. — Calif.

Bednar, Mary Ellen — N.Y.

Beesley, Thomas Howard — Va.

Beeson, Bruce Lloyd — Va.
A.B. 1952, Michigan State College

Beeson, Daniel Leonard — Fla.
B.S. 1951, Florida Southern College

Beeson, William T., Jr. — Wash.
A.B. 1954, University of Washington

Beeson, Robert Gilman — D.C.

Beem, Jacqueline Rose L. — Va.
B.S. 1953, University of Vermont

Beeman, Lelia Caroline — Ga.
A.B. 1935, Agnes Scott College

Beemer, William Frederick — Pa.
A.B. 1949, Ursinus College
A.M. 1953, Clark University

Beeson, Edmund H. — Va.
B.S. 1941, Kansas State College

Beeson, Hamilton Scott — Va.

Beeson, John Joseph — Pa.

Behan, Augustus Matthew — D.C.

Behan, Bhupendra — India
A.B. 1945, College of Commerce, Delhi, India

Beebe, Lloyd William — Minn.
B.B.A. 1951, University of Minnesota

Beebe, Edward August — Va.

Beebe, Avon Harold — N.Y.

Beegan, Charles Eugene — Md.
B.S. 1951, University of North Carolina

Beegan, Nicholas Theodore — Md.

Beegle, Edward Lincoln — Mo.

Beegle, Susannah Forde — Mont.
B.S. 1954, Milwaukee Downer College

Beehler, Nellie Louille — Md.

Beele, Sally Ann — D.C.

Beelenk, Carol Jean — Conn.
B.S. 1953, Simmons College

Beelfield, Thomas Casey, Jr. — D.C.

Beeland, William Beeber — D.C.

Beelin, Robert Lewis — D.C.

Belensky, Samuel Michael — Conn.
A.B. 1955, University of Bridgeport

Belisary, John Robert — S.C.
B.S. 1950, University of South Carolina

Bell, Barbara Ann — Md.

Bell, Charles W. — Md.

Bell, Alfred Michael — D.C.
B.S. 1949, Niagara University

Bell, Forrest Horatio — Va.

Bell, Frances Rinaldi — Md.
B.S. 1951, Wilson Teachers College

Bell, Francis Hugh — Va.

Bell, Gregory McCaleb, Jr. — Va.
B.S. 1948, U.S. Naval Academy

Bell, Iris Yvonne — Fla.
A.B. 1938, Florida State College for Women

Bell, Jack Edison — Va.
LL.B. 1948, The George Washington University

Bell, Joseph Huxley III — Va.

Bell, Patricia Lynne — Md.
A.B. 1956, The George Washington University

Bell, Robert William — Va.

Bell, Thomas Cherry — Md.
B.S. 1949, Wisconsin State College, La Crosse

Bell, Thomas Graham — N.Y.
B.S. in B.A. 1950, University of Nevada

Bell, William Salisbury — Nev.

Beller, Bobbie Read — Md.

Beller, Margaret Anne — Md.
A.B. 1955, The George Washington University

Belmont, Daniel Edward — D.C.

Belmont, William Robert — D.C.
A.B. 1952, DePaul University
A.M. 1954, The George Washington University

Belt, John West, Jr. — Md.

Belt, Lloyd Kenneth — Va.
A.B. 1952, A.M. 1953, The George Washington University

Belton, Rosemary Ann — Va.

Belton, Lewis Benton — Va.

Belton, Henry Horton — Pa.
B.S. in M.E. 1941, Purdue University

Bender, Luther Huyett — Md.
B.E.E. 1929, Johns Hopkins University
M.S. 1933, Ph.D. 1936, Columbia University

Benedict, Thomas Reilly — Md.

Benfield, Jason Thomas — Md.

Benford, Charles Robert — D.C.

Bengtson, Ann Franklin — D.C.

Bengtsson, Gertrud Adeline — La.

Benit, Henry Junior — Md.

Benjamin, Robert Painter — Va.

Benn, Josephine Williams — Conn.

Bennett, Bradley Frederick — Md.
B.S. 1935, U.S. Naval Academy
M.S. 1940, M.S. 1953, Massachusetts Institute of Technology

Bennett, Charles Michael — Pa.

Bennett, Daniel Arthur — Md.
M.E. 1929, Stevens Institute of Technology
LL.B. 1934, J.S.D. 1936, Brooklyn Law School
LL.B. 1937, Southern Methodist University

Bennett, Edward Ferris D.C.
A.B. 1953, University of Maryland
Bennett, Gene Leon D.C.
Bennett, Joan Rataczak D.C.
Bennett, Kenneth Chester Va.
B.M.E. 1949, The George Washington University
Bennett, Lorraine Evelyn S.D.
Bennett, Patricia Ann Wash.
Bennett, Paul Plutenon Pa.
Bennett, Richard Lee Md.
Bennett, Roland Keener Md.
Bennett, William Richard Va.
Bennett, William Roy, Jr. D.C.
Benoit, Laurent Joseph Va.
A.B. 1950, Assumption College
Bensdorf, James John Texas
Benson, Kenneth Richard Md
Benson, Virginia Noel Va.
Benson, Robert Lynn Va.
Benson, William Lewis D.C.
B.S. 1955, U.S. Naval Academy
Benton, Lee Letterman, Jr. Va.
Benton, Walter James Conn.
Ben-Yaakov, David Israel
Berkowitz, Gilda Roslyn D.C.
Berens, Donald Frank Ohio
Berezny, Justine Alvin Ohio
B.S. 1951, M.B.A. 1955, Indiana University
Bereskin, Helen Louise Pa.
A.B. 1947, University of Pennsylvania
Beresford, Spencer Moxon D.C.
B.S. 1938, LL.B. 1942, Harvard University
Berg, Easton Cramer Md.
A.B. 1954, Ohio State University
Berg, George Iota Va.
Berg, Gordon Howard Oreg.
B.S. 1950, University of Alabama
Berg, Morton D.C.
Berg, Robert Stanfield Ill.
B.S. 1949, U.S. Naval Academy
Bergeron, Harold Theodore Wash.
Berger, Alan Benton D.C.
Berger, Eleanor Miriam D.C.
Berger, Florence Bernice Ill.
A.B. 1952, The George Washington University
Berger, Larry Jerold D.C.
Berger, Leonard N.Y.
B.S. 1952, Queens College
Berger, Philip Kenneth Fla.
Berger, Stanley Elliott D.C.
Bergera, Jerald James Utah
Bergman, Mary Schaffer Md.
A.B. 1955, Brooklyn College
Bergman, Montague Noah N.Y.
Bergstrom, Janet Joyce D.C.
A.B. 1951, Dunbarton College of the Holy Cross
A.M. 1952, Catholic University of America
Bergstrom, Roger Carlton D.C.
A.B. 1955, Wisconsin State College
Berkson, Barbara Jane D.C.
Berlin, Blanche D.C.
Berlin, Wilma Jane Va.
Berliner, Hans Jack D.C.
A.B. 1954, The George Washington University
Bermudez, Ana Inez Puerto Rico
Bernard, Betty Ann Md

Bernard, Carol Ann N.Y.
Bernard, Eugene Louis Ohio
A.B. 1949, Ohio State University
LL.B. 1951, The George Washington University
Bernard, MaryLou Va.
Bernard, Richard Lynn Pa.
L.L.B. 1952, University of Cincinnati
Bernoff, Gerald Darwin Va.
A.B. 1948, University of Minnesota
M.S. 1951, New York University
Berne, William D.C.
Bernhardt, James Irwin Va.
Bernkopf, Walter Charles D.C.
B.S. in E.E. 1949, University of Denver
Bernstein, Alan Herbert Pa.
B.S. in Ch.E. 1955, Drexel Institute of Technology
Bernstein, Helen Kamin Va.
A.B. 1949, Hunter College
Bernstein, Jerome Seymour D.C.
Bernstein, Judith Pa.
Bernstein, Marcella D.C.
B.S. 1946, Johns Hopkins University
A.M. 1949, American University
Bernstein, Maurice S. Mass
B.S. 1947, Massachusetts Institute of Technology
Bernstein, Morton Pa.
A.B. 1950, Pennsylvania State University
Bernstein, Paul D.C.
Bernstein, Philip Aaron D.C.
Bernstein, Stuart Paul N.Y.
A.B. 1955, New York University
Bernstein, Tamara D.C.
Berrian, Mae Annie Mo.
A.B. 1922, Bethany College
A.M. 1947, Stanford University
Berrio, Esther Maria D.C.
Berry, Dorothy Grace Calif.
Berry, Donald Raymond Va.
Berry, Elizabeth Benzone Pa.
Berry, Estelle Davis Va.
Berry, John Lapham Md.
B.S. 1949, University of Pennsylvania
Berry, Katherine Mabie Calif.
Berry, Richard Marshall Va.
Berry, Robert Arnett Md.
Berry, Suzanne Va.
Berry, William Ind.
B.S. 1946, U.S. Military Academy
A.M. 1955, The George Washington University
Berry, William John Pa.
Berry, William Robert D.C.
B.S. 1951, University of Maryland
Berryman, Rose Lee D.C.
Bertsch, Alan Charles N.Y.
A.B. 1952, A.M. 1953, University of Miami
Bertsch, Rose A. Va.
B.S. 1950, University of Minnesota
Bertram, Estella Sturm Va.
A.B. in Ed. 1952, The George Washington University
Besson, Sheridan Eustace D.C.
A.B. 1951, The George Washington University
Best, Harold Lloyd Va.
A.B. 1949, A.M. 1951, The George Washington University

Best, Joan Carolyn — Va.
Best, Lee James — D.C.
A.B. 1959, Duke University
Best, Stephen Lewis — Md.
A.B. 1963, Kenyon College
Bester-Steiner, Helen M. — D.C.
Betancourt, Rachel Adele — D.C.
Betsill, Richard Wilson — Va.
Bettenmueller, Richard Albert — D.C.
B.S. 1953, College of the City of New York
Betters, Richard Keck — Md.
Betts, Ellen Cecile — D.C.
A.B. 1961, University of California
Bettway, David Strayer — Va.
Bettner, Joan Rutland — Va.
A.B. 1950, The George Washington University
Bevis, Charles Vann — Fla.
Beyda, Cathel Rutland — D.C.
Beyer, Carolyn Louise — D.C.
Bezou, Nancy Carol — Va.
Bezuk, George Stephen — Pa.
Bialosky, William Robert — Md.
Bibler, Charles Kelly — Va.
Bickerton, George Edward — D.C.
Bickford, Frederick H. C., Jr. — Va.
B.S. in E.E. 1952, University of Denver
Bickley, James Ernest — Minn.
Bickley, John Lewis — Fla.
A.B. 1955, The Citadel
Bidwell, Wilma Walker — Colo.
A.B. 1951, San Francisco State College
Biehl, Hayes William Alan — Va.
A.B. 1950, University of Maryland
Bigelow, Barbara L. — Va.
B.S. 1958, Simmons College
Bigham, Walter Julius — Md.
Biggs, Robert Ernest — D.C.
A.B. 1951, University of Maryland
Bigsbee, Daniel Jacob B. — Md.
Bilbrey, Neale Leon — D.C.
Bilderback, Alfred Ernest, Jr. — D.C.
Bilgrave, Henry Wade — D.C.
B.S. in C.E. 1951, Tufts College
Bigger, Warner Thomas — Fla.
B.S. in Ch.E. 1950, University of Florida
A.M. 1950, Stanford University
Biggs, Betty Lee — Va.
A.B. 1955, College of William and Mary
Biggs, Suzanne — D.C.
A.B. 1954, Mills College
Biggs, William Campbell — Va.
Bikle, Anne Snell — Va.
Billeaud, Lillian Frances — D.C.
B.S. 1951, Simmons College
Billerbeck, Adolph — D.C.
B.S. 1954, Ohio State University
Billes, Howard Kennedy — Tenn.
B.S. 1951, U.S. Air Force Institute of Technology
Billes, Lucinda Lynn — Va.
Bilger, Donald Earle — Va.
B.S. 1951, University of Colorado
J.D. 1954, LL.M. 1955, The George Washington University
Biller, James Edward — Va.
Billiar, Thomas Harrison — Va.
Billings, Lake Thorpe — D.C.
Billingsley, Carolyn — Va.
A.B. 1954, The George Washington University
Billis, Angelos Vasilios — M.
LL.B. 1955, University of Salonika, Greece — D.
Bilmanis, Ceronis — D.
Bilmanis, Milda — M.
Bimmerle, Warren Wilmer — D.
Binnendijk, Edgars Leopolds — Va.
Birkland, Marjorie Lynette
A.B. 1954, The George Washington University — D.
Bingham, Janet Elaine — Md.
A.B. 1955, Principia College — D.C.
Birch, Terrell Calhoun
Birkhead, Christopher — Va.
A.B. 1951, Harvard University — Va.
Bird, Jeanne Meyer — Va.
Bird, Lillian Ames
Bird, Mary Katherine — Fla.
A.B. 1955, Mary Washington College — D.C.
Bird, Thomas Buckingham, Jr. — Va.
Birdsong, Philip Ellenson — Va.
Birkhead, Barbara Belwood
Birkhold, Stanley Clair — D.C.
B.S. 1957, University of Michigan — Colo.
Birmingham, Thomas Harlan
Birnbaum, George — D.C.
A.B. 1941, Brooklyn College — D.C.
M.S. 1949, The George Washington University — D.C.
Birsh, Judith Rosenberg
Biscamaks, Ilze
Bischoff, Lionel Chalmers — Md.
B.S. 1950, College of Charleston
Biscoe, Mary Mercer — Miss.
B.S. 1942, Hampton Institute — D.C.
Bishop, Christine Elizabeth
Bishop, Daniel Frederick — D.
B.B.A. 1954, University of Michigan — D.C.
Bishop, Mary Louise
Bisker, Arnold Arnold — D.
A.B. 1951, The George Washington University
Bissell, Sara Elizabeth — Md.
A.B. 1953, Randolph-Macon College
Bisset, Alfred, Jr. — Md.
B.S. 1952, University of Maryland — D.
Bissett, John Leonard, Jr. — L.
Bissonette, George Maurice — La.
Bissonnet, Virginia Anne
Bittner, Frances — Va.
B.S. 1941, Bucks College — Ga.
Bivarra, Violet Mae
Bivens, Esther Ann — Va.
A.B. 1952, Shorter College — D.C.
Black, Dora Blalyn
Black, George Alexander — Va.
A.B. 1954, University of California — Calif.
Black, George Roser — W.
Black, Harvey
Black, John Woodland — D.
A.B. 1947, University of Washington — D.
M.I.A. 1949, Columbia University — D.
Black, Mary Elizabeth — D.
Blackburn, Eva Katharine
Blacker, Raymond
Blackford, Virginia Lee — I.
B.S. 1952, American University
M.S. 1961, The George Washington University — Va.
Blackgear, Thomas Russell — Md.
A.B. 1952, Claremont Men's College
Blackwelder, Theodore Fisher
B.S. 1952, Roanoke College

Blackwell, Elizabeth Gwenlwyn Va.
A.B. 1955, University of Virginia
Blackwell, Horace Dawson D.C.
B.S. 1952, Morgan State College
Blackwell, Lucy Earl Pa.
A.B. 1951, University of Pittsburgh
Blackwell, Stuart Manley Va.
Blackwell, Thomas Edward Va.
A.B. & B.A. 1955, Roanoke College
Blackwood, David Edward D.C.
B.S. in M.E. 1953, University of Alabama
Bladergroen, Robert John Va.
A.B. 1942, LL.B. 1947, Cornell University
Blades, Beverly Layton D.C.
Blades, James Layton D.C.
Blades, Mary Jean Mo.
Blaesser, Chancellor Davis Md.
A.B. 1955, The George Washington University
Blair, Ascott Urhame N.C.
A.B. 1942, Lenoir Rhyne College
Blair, Charles Robert Va.
Blair, Richard Eugene Texas
A.B. 1948, University of Washington
Blair, Warren Emerson D.C.
LL.B. 1954, DePaul University
Blake, Edward Lovell W.Va.
Blake, Frances Howard D.C.
Blake, Jane Rosston Va.
B.S. 1953, Roanoke College
Blake, M. Jean D.C.
B.S. 1946, West Virginia University
Blake, William Roberts D.C.
Blakely, James Anderson, Jr. N.Y.
A.B. 1943, College of the Holy Cross
Blakemore, Thomas Arnheim Md.
B.S. 1935, University of Minnesota
A.M. 1940, The George Washington University
Blaker, Martin Joseph D.C.
Blanco, Ramon Jose, Jr. Va.
Blandford, Lois Dale Va.
Bland, George H. Md.
B.S. 1949, University of South Carolina
Blankman, Larry Marvin D.C.
Blanton, Marlene D.C.
Blasingame, Arthur, Jr. D.C.
A.B. 1949, Cedar College
LL.B. 1952, Harvard University
Blasdel, Helen Carol
Blasdell, Robert Frank D.C.
Blaustein, Paul H. Md.
B.S. in E.E. 1953, Columbia University N.Y.
Bleam, Charles Robert, Jr. D.C.
Bleam, Harvey Alexanda Va.
B.S. 1950, Wilson Teachers College
A.M. 1952, The George Washington University
Blech, Samuel Herman Md.
B.S. 1955, Brooklyn College
Bledsoe, Margaret Duke D.C.
B.S. 1944, Mary Washington College
Bledsoe, Samuel Carter Md.
A.B. 1952, Haverford College
LL.B. 1955, The George Washington University
Bleich, Robert Rexford Va.
B.S. 1951, Ohio State University
Blish, Isabel Cassidy D.C.
B.S. 1954, Wilson Teachers College
Blitz, Claire Md.

Bloch, Mary Boettner Va.
Bloch, Richard Montgomery D.C.
Block, Christopher Turner D.C.
A.B. 1945, Princeton University
Block, Vernon Irving D.C.
A.B. 1950, Yale University
Blodgett, Caroline Dana N.H.
A.B. 1954, Dartmouth College
Blodgett, John Russell, Jr. D.C.
Blomquist, William Anthony D.C.
Bloom, Leroy Lewis Md.
B.M.E. 1955, The George Washington University
Bloomer, Lemuel Franklin Pa.
Bloomfield, George Robertson Md.
Bloomer, Lenora E. Va.
B.S. 1954, Ohio State University
LL.B. 1949, Georgetown University
Blue, Andrew Eaton Va.
Blumberg, Abraham D.C.
A.B. 1947, A.M. 1954, The George Washington University
Blum, Lorraine N.J.
Blum, Joseph Va.
B.S. 1937, College of the City of New York
A.M. 1948, The George Washington University
Blumberg, David Henry N.Y.
Blumenfeld, Hermann Stanley D.C.
Blumenthal, Sheldon Jay Wis.
B.S. 1954, Marquette University
Blunda, Louis Eugene D.C.
Blunt, Talbot David D.C.
Blue, Harry Porter Md.
Boardwine, Robert Anderson Va.
Boarman, Charles D.C.
Bodkin, Cecilia Rose D.C.
Body, Margaret Ann Va.
Boehnert, Irma Elizabeth N.Y.
Boerner, Jesse Clara N.Y.
A.B. 1943, The George Washington University
Boehm, Casper Ralph D.C.
Boerger, Richard John D.C.
A.B. 1954, New York State College for Teachers, Albany
Boehme, Alice Lisa Tenn.
Boerger, Charles Edward Conn.
B.S.E. 1942, University of Southern California
Boelke, Donald Rinnard Wis.
A.B. 1941, Carleton College
Boerger, Vincent Richard Mich.
A.B. 1948, Olivet College
Boesch, David Swaine Md.
Boeglin, Andrew Pa.
B.S. 1954, The George Washington University
Boeglin-Gomez, Bernard Stanley Va.
Boggen, Robert William Va.
A.B. 1948, University of Pennsylvania
A.M. in Ed. 1951, The George Washington University
Boggs, Beatrice
Boggess, Paul Va.
A.B. 1948, Clark College D.C.
Boggerstaff, George Benjamin N.J.
Bogosh, Arpad Louis Md.
Doctor of Law 1942, University of Budapest
Doctor of Law 1953, University of Paris

Bohan, John Patrick — Md.
A.B. 1953, The George Washington University

Bohannon, Marion Rebecca — Va.
A.B. 1953, Lynchburg College

Bohrer, Norman Kay — D.C.

Bomblatt, Alice Miriam — N.Y.

Bonas, George Aristotle — Va.
B.S. 1951, Franklin and Marshall College

Bonsonevault, Lorette Lucy — D.C.
A.B. 1954, The George Washington University

Bonsty, Joseph Philip — Mass.
A.B. 1951, Dartmouth College

Boisvert, Elaine C. — D.C.

Boisvert, Gerald Eloi — Md.

Bok, Derek Curtis — Va.
A.B. 1951, Stanford University
LL.B. 1954, Harvard University

Bok, Sissela Ann — D.C.

Boland, Charles Aloysius — D.C.
B.S. 1951, University of Scranton

Boland, James — D.C.

Boland, John William — D.C.

Boland, Joseph Eugene — N.J.
A.B. 1953, The George Washington University

Boland, Margaret Anne — N.Y.
A.B. 1950, Nazareth College (N.Y.)
LL.B. 1954, The George Washington University

Bold, John Samuel — Minn.

Boles, Josephine Alice — Texas
A.B. 1934, Texas Technological College

Boles, Roger — Calif.
A.B. 1948, Stanford University

Boley, Robert Eugene — D.C.
A.B. 1951, The George Washington University

Bolick, Richard Darrell — N.C.

Bolin, Richard Frank — Ala.
B.S. 1918, Howard College

Bolin, Nora Reese — D.C.

Bolin, Thomas Donald — D.C.

Bolin, Robert William — D.C.

Boll, Richard Lee — Va.
B.S. in C.E. 1949, University of Southern California

Bolton, Mary Ann — D.C.

Bonaccorso, Joan M. — Maine

Bonar, Marilyn Ann — D.C.

Bonaventure, Carmine Pasquale — N.Y.
B.S. 1951, Fordham University

Bondurant, Claude Edward — D.C.

Bonhomme, Helen Constance — Md.

Bond, Russell Evans — Md.
A.B. 1951, Washington Missionary College

Bondareff, Erwin Allen — Md.
B.S. in Phar. 1954, The George Washington University

Bonds, John Meredith — Va.

Boneta, Joseph Edward, Jr. — Va.

Bonfield, Charles Thomas — Va.

Bongiorno, Theodore Ervin, Jr. — D.C.

Boniewskie, Richard Martin — Pa.

Bonn, Austin Joel — Va.
B.S. 1934, College of the City of New York
A.M. 1951, The George Washington University

Bonnet, Betty Lawson — D.C.
B.S. 1952, Boston University

Bonnett, Joseph Lewis — Pa.

Bonnevie, Robert Vance — Pa.

Bonney, Jack — Wash.
B.S. 1949, A.M. in Ed. 1952, Pennsylvania State University

Bontadelli, James Albert — Va.
B.S. in I.E. 1951, Oregon State College

Book, Eunice Myrna — D.C.

Booker, Brooks William, Jr. — Va.
A.B. 1954, Sacramento State College

Booker, David Carlton — Va.
B.S. 1941, Columbia University

Booker, Virginia Carrico — Md.

Boole, Ronald Eugene — Pa.

Boor, Samuel Vladimir — Va.
A.B. 1954, The George Washington University

Boourdet, Annette — D.C.

Boon, Ann Pauli — Va.

Booth, Charles Theodore — Va.
A.B. 1933, University of Richmond

Booth, Rexford George — D.C.

Boothe, Edward Milton — Pa.

Borak, Vera Marie — Va.

Borchardt, Norma Puryear — Calif.
A.B. 1936, Vassar College

Bordeaux, John James — Ga.

Borden, Beverly Spaulding — Md.

Border, Bonnie Kathryn — Va.

Borders, Mary Louise — Pa.
A.B. 1951, Grinnell College
A.M. 1952, Columbia University

Borgia, Frances Adelaide — D.C.

Borgmeister, Margaret C. — D.C.

Borger, Henry Miller, Jr. — Md.

Borges, David Knight — Va.

Boorman, Martha Ruth — N.Y.
B.S. 1928, Mississippi State College for Women

Borrowed, James H. — Md.

Borsgrosser, Robert Leslie — D.C.

Borstelmann, Garet Alexander — Va.

Borus, Jean Grunwald — N.Y.

Borus, Nathaniel — Md.

Bosanek, Martha Beatty — Md.

Bosco, Leopold Bede — D.C.

Bosenick, Ronald Jack — D.C.

Bosenecker, Ernest — Va.

Bosenecker, Jule — Va.

Boston, Mark Edward — Iowa
B.S. 1954, Arizona State College — Mass.

Borup, De Ann — Wa.

Boryczewski, Walter Edward — Wa.
A.B. 1953, Clark University

Bosbee, Donald Deane — S.C.
B.S. in C.E. 1950, University of Wisconsin — D.C.

Bostick, Benjamin Edward — Va.

Bostick, James Lyne — Va.

Boswell, John Gordon — Pa.
A.B. 1953, The George Washington University — Del.

Bosford, Robert Jean — D.C.

Bosque, Marion Eugene — Md.

Botko, Mary Ann — Va.

Bottcher, Hans Gordon — Ga.
B.S. in Ed. 1948, Ed.M. 1949, Boston University

Bott, Marianne — Va.

Botten, Donald Leroy

Bottenfield, Chester Lee — Va.
Bottum, Joe Henry III — S.D.
Boudreau, Alfred Hugh Oliver, Jr. — Va.
A.B. 1940, LL.B. 1949, Boston University
Bouquet, John Louis
Bourgea, Ronald James — D.C.
Bourget, Marie Paule Irene — Md.
Bourland, Stephen Phelps — D.C.
Bourne, Robert Dulles — D.C.
A.B. 1950, University of Michigan — N.Y.
Bouscaren, Nancy Margaret — D.C.
A.B. 1952, The George Washington University
Bouton, Charles Earhart
B.S. 1952, University of Maryland — Md.
Bouton, Margaret Innes — D.C.
A.B. 1935, Wellesly College
A.M. 1944, Ph.D. 1946, Radcliffe College
Bove, Grace Cunningham — D.C.
A.B. 1953, University of New Mexico
Bovis, Henry Eugene — Fla.
A.B. 1948, A.M. 1950, University of Florida
Bowditch, Paula Louise — Md.
A.B. 1954, Goucher College
Bowen, Allan Fitzgerald
Bowen, Doris Davis — Va.
Bowen, James William — D.C.
Bowen, John Franklin — Ill.
Bowen, Joseph A. — Va.
Bowen, Leonard Ernest — Mo.
Bowen, Lois Green — D.C.
A.B. 1935, American University — D.C.
A.M. 1952, The George Washington University
Bowen, Marjorie Percy
A.B. 1924, Goucher College — D.C.
A.M. 1933, Columbia University
Bower, Mary Frances
Bowen, Ray L. — Va.
D.D.S. 1953, University of Southern California — Md.
Bowen, Robert Julian
Bower, Violet Ella — D.C.
Bower, Robert Sharon — W.Va.
Bowers, Betty Arleen — Va.
Bowers, Edgar Scott — D.C.
Bowers, Martha Belle — D.C.
A.B. 1944, A.M. 1946, University of Chicago — D.C.
Bowers, Mary Blair
A.B. 1952, A.M. 1955, Duke University — N.C.
Bowers, Mary Katherine
Bowers, Melville Doney — Va.
B.S. 1951, Massachusetts Institute of Technology — Md.
Bowers, Richard Simpson
A.B. 1950, The George Washington University — D.C.
Bowes, Donald Spencer
Bowler, Mary Cecilia — D.C.
B.S. in Ed. 1931, University of Virginia — D.C.
Bowles, Bernie Whitlock
A.B. 1934, Westhampton College — Md.
Bowles, Frederick Forrest
Bowles, Robert Edward — Ill.
Bowles, Roswell Page — D.C.
B.S. 1922, A.M. 1925, College of William and Mary — Va.
Ph.D. 1932, Columbia University
Bowling, James Walter — W.Va.

Bowly, Lawrence Vaughan — Md.
B.S. 1954, American University
Bowman, Charlotte Elizabeth — Md.
Bowman, Homer Hewins — Mo.
B.S. in Ed. 1938, University of Missouri
Bowman, James Homer — Calif.
Boyars, Carl — Md.
B.S. 1949, College of the City of New York
M.S. 1952, The George Washington University
Boyd, Anne Elizabeth — Pa.
Boyd, Frank Marvin — Md.
Boyd, George Alexander — D.C.
Boyd, Harold Erasmus — Va.
B.M.E. 1953, The George Washington University
Boyd, Mary Agnes — D.C.
Boyd, William Cornelius — D.C.
B.S. 1938, Miner Teachers College
Boyden, Donald Kent — S.D.
Boyer, Anne C. — Va.
Boyer, Donald deForest — Md.
Boyer, Frankie Adelaide — Ind.
A.B. 1935, A.M. 1954, Cincinnati Conservatory of Music
Boyer, Lorna Mercedes — Ind.
Boyers, Thomas IV — Texas
Boyle, Albert Louis — Md.
Boyle, Conrad Lewis — D.C.
B.S. in Mining Eng. 1924, Oregon State College
Bozarth, Elmer Neal, Jr. — Md.
A.B. 1950, Johns Hopkins University
Bozes, John James — Va.
Brackbill, Robert Briggs — Pa.
Bracken, Dwight Glovis — D.C.
A.B. 1923, The George Washington University
Brackett, Margaret Mae — Va.
Braddy, Harold DeForest — Md.
B.S. in B.A. 1950, University of Florida
Braden, Olive Marie — D.C.
Bradfield, Beth Ann Rush — Pa.
B.S. 1954, Temple University
Bradfield, James Allen — Pa.
A.B. 1952, Temple University
Bradford, Margaret Woodward — D.C.
B.S. 1951, University of Maryland
Bradford, Victoria — D.C.
Diplôme 1951, University of Paris
Bradley, Anita Lee — Va.
Bradley, Daniel Quentin — D.C.
Bradley, Ernest Russell, Jr. — Va.
Bradley, Jean Caroline — D.C.
B.S. 1943, Swarthmore College
Bradley, Robert Bird — Md.
B.S. 1948, University of Maryland
Bradshaw, Jack Thomas — Mass.
B.S. in E.E. 1940, Worcester Polytechnic Institute
Brady, Aubrey Loren — Ariz.
B.S. 1948, Texas Institute of Technology
Brady, Barbara Ann
Brady, Lulie Carolyn — Md.
B.S. 1942, Wilson Teachers College — D.C.
Brady, Francis M.
Brady, Gerald Thomas — Md.
Brady, Joyce Maureen — N.Y.
Brady, Melvin Michael — Philippines
Bragg, Madison Forest — D.C.
B.S. 1949, Wake Forest College — N.C.

Brace, Oliver Burt — Va.
S.M.E. 1950, Cornell University
Bra[illegible], Kenner Augustus — S.C.
Bra[illegible], Leonard Monroe, Jr. — Md.
Bra[illegible], Burt — D.C.
Bra[illegible], Janet Natalie — D.C.
Bra[illegible], Molly — N.J.
Bra[illegible], Prentiss — D.C.
Bra[illegible], Eugene George — D.C.
Bra[illegible], Albert Williams, Jr. — Md.
Bra[illegible], Isabel Howard — Md.
Bra[illegible], Seymour — N.Y.
Bra[illegible], Patsy Rae — S.D.
B.S. 1963, Iowa State College of Agriculture and Mechanic Arts
Bra[illegible], Robert Frost — Md.
B.S. 1944, M.B.A. 1948, New York University
Bra[illegible], Raymond Andrew — D.C.
Bra[illegible], Arthur Livingston — Ga.
B.E. 1954, Georgia Institute of Technology
Bra[illegible], Lawrence Adrienne — Va.
Bra[illegible], Charles Dyer — Va.
Bra[illegible], Anne Wills — Md.
A.B. 1940, University of North Carolina
A.M. 1951, Radcliffe College
Bra[illegible], John Llewellyn — Texas
Bra[illegible], Dixie Gladys — Md.
Bra[illegible], Franklin Pollard — Va.
A.B. 1954, University of Denver
Bra[illegible], Robert John — N.Y.
A.B. 1951, Syracuse University
Bra[illegible], Helen Jane — D.C.
Bra[illegible], Arlene Rawlins — Va.
Bra[illegible], William McKenzie — Mich.
B.S. 1943, U.S. Naval Academy
Bra[illegible], Catherine Scott — Va.
B.S. 1943, North Carolina State Teachers College, Elizabeth City
Bra[illegible], Kathryn Mary — Md.
A.B. 1932, Pennsylvania State University
A.M. 1935, Columbia University
Bra[illegible], Robert Joseph — D.C.
B.S. 1950, Seton Hall University
Bra[illegible], Christian Hildebrand — D.C.
Bra[illegible], Ethel Conrad — Md.
Bra[illegible], Jacqueline Virginia — Va.
Bra[illegible], Rhoda M.H. — D.C.
A.B. 1951, Vassar College
Bra[illegible], William Hunter — Md.
A.B. 1952, Indiana University
Bra[illegible], James Michael — Md.
Bra[illegible], Lewis Arthur — Pa.
Bra[illegible], Beatrice Ruth — N.Y.
Bra[illegible], Elizabeth — D.C.
Bra[illegible], Sadie Horowitz — D.C.
Bra[illegible], Stanley Irwin — D.C.
A.B. 1948, The George Washington University
Bra[illegible], Suzanne Cassie — D.C.
Bra[illegible], Joseph Jennings — Va.
B.S. in M.E. 1952, Drexel Institute of Technology
Bra[illegible], Marvin — N.Y.
B.S. in B.A. 1951, Ohio State University
Bra[illegible], Amelia — N.D.
B.S. in H.E. 1954, The George Washington University
Bremer, Hans Otto — D.C.
A.B. 1935, Hastings College
Bremer, Mary Ellen — D.C.

Bra[illegible], Ivan Bernard — Md.
B.S. 1950, University of Maryland
Bra[illegible], William Rawson
Bra[illegible], Anthony Bernard
B.S. 1952, Georgetown University
Bra[illegible], Eugene Joseph
Bra[illegible], James Joseph
Bra[illegible], Peter Pharis
A.B. 1954, Allegheny College
Bra[illegible], William Francis
B.S. 1949, University of Scranton
A.M. 1953, The George Washington University
Bra[illegible], Joseph Blaine
Bra[illegible], Alice Magruder
Bra[illegible], Donald Campbell
Bra[illegible], Adam Hancock
A.B. 1952, Emerson College
Bra[illegible], Marsha Sally
Bra[illegible], Diana May
Ed.B. 1951, Keene Teachers College (N.H.)
Bra[illegible], Sue McClanahan
A.B. 1934, A.M. 1936, University of North Carolina
Brown, Charles Marion
A.B. 1951, University of Maryland
Brown, Dorothy Zeller
Brown, Edward Chambers
B.S. in C.E. 1932, Michigan State University
Brown, Thomas William
Brubaker, Cecil Freeman
LL.B. 1943, Baltimore University
LL.M. 1954, The George Washington University
Brubaker, Donald Stanley
Bruhn, Wayne Jameson
Brun, David
B.S. in C.E. 1950, Virginia Institute of Technology
Brunnock, Bernard Thomas
B.S. 1951, Wake Forest College
B.S. 1951, North Carolina State College
M.S. 1954, University of Maryland
Brunson, Harvey Clinton
A.B. 1951, Central City College
Bruton, Dorothy Reid
Bryan, Frank Bernard
Bryan, Lucas Flynn
Bryant, Charles Drew
Bryant, Donald Hollis
B.S. 1954, University of Maryland
Bryant, Nancy Lee
B.S. 1951, University of Maryland
Bryant, Cooper Buck
A.B. 1951, Roanoke University
Bryn, Lewis Albert
LL.B. 1938, The George Washington University
Bubnick, Margaret Rumbold
Buchan, Edna Jane
Buckley, Thomas Aiken
P.E.E. 1952, Villanova University
Buck, William Mowry
A.B. 1928, Franklin and Marshall College
A.M. 1932, Columbia University
Buckner, Barbara Sue
Buckner, Norton M
B.S. in C.E. 1952, Wayne University
Buckner, Robert Lee
Bratt, Beverly Joy

Brittain, Hallie Glyn D.C.
Brittin, Edward Baylis Md.
B.S. 1953, The George Washington University
Brittingham, Irene Catherine
Britton, Keith George Mich.
A.B. 1952, The George Washington Md.
University
Britton, Martha Alice
Broadbent, Isabelle J. D.C.
Broaddus, Betty Louise D.C.
Broaddus, John Thomas, Jr. D.C.
A.B. 1950, Lynchburg College Va.
Brock, Harriet E.
A.B. in Ed. 1930, Milwaukee State N.Y.
Teachers College
Brock, James Robert
Brockdorff, Olaf Gilbert Va.
Brockman, Julia Hall Md.
B.S. 1951, Virginia State College Va.
Brockman, Lewis Grey
A.B. 1953, Lynchburg College Va.
Broda, John Joseph
Brodie, Gary Byron Md.
Brodney, Francis Emile D.C.
B.S. 1943, Long Island University Va.
A.M. 1949, New York University
Brodsky, Arnold Bruce
Brody, Grace Freidson D.C.
B.S. 1950, Columbia University D.C.
Ed.M. 1955, University of Maryland
Broertjes, Vernon Harry
B.S. 1941, Indiana University Pa.
Broesamle, Jack Richard
Broida, Fern Shirley Va
Bronec, Bohumil D.C.
A.M. 1948, University of Technical D.C.
Sciences, Prague, Czechoslovakia
Brookbank, John Spencer, Jr.
B.S. 1953, University of Maryland Md
Brooke, Alban Emerson
A.B. 1953, The Citadel Md.
Brooke, Dallas Joe
Brooks, Barbara Elaine D.C.
B.S. 1948, Howard University D.C.
Brooks, Cynthia
Brooks, David D.C.
Brooks, Elizabeth Stewart D.C.
B.S. in Ed. 1943, Boston University Va.
Brooks, Jerry
A.B. 1953, Roosevelt University Ill.
Brooks, Phillip Henry
A.B. 1953, The George Washington Va.
University
Brooks, Randall
A.B. 1951, The George Washington Va.
University
Brooks, Robert Ashton
Brooks, Roy Dale Va
Brooks, William Allen, Jr. Ohio
A.B. in Ed. 1954, The George Md.
Washington University
Brookshier, Robert Keith
B.S. 1940, Oregon State College Oreg.
Brophy, Gilbert Thomas
B.S. in B.A. 1949, University of Florida Fla.
Brosnan, Carol R.
Brouillette, Donald Edward N.J.
Brouillette, Robert Tate Ill.
Brow, Kenneth Allan Md.
Browdy, Michael Dallas Md.
Brown, Addison Herbert III Md.
Va.

Brown, Ainsworth Howard Md.
A.B. 1955, Gettysburg College
Brown, Albert Cleveland Md
Brown, Anne Merton Ohio
Brown, Barbara Janet D.C.
Brown, Bessie Iva D.C.
Brown, Bessie Lee Fla.
Brown, Charles Arthur D.C.
Brown, Charles Eale Md.
B.S. 1947, University of Maryland
Brown, Charles Harmon Fla.
A.B. 1951, Lafayette College
Brown, Charles Lester W.Va.
A.B. 1949, West Virginia Wesleyan
Brown, Charles Victor Md
Brown, Dale Edward Mo
B.S. 1942, Kansas State College
Brown, Donald Acker Md
A.B. 1951, St. John's College
Brown, Donald Carter Md
Brown, Dorcy Alan Va
Brown, Edwin Elroy Mich.
B.S. 1953, Florida State University
Brown, Elise Ann Md
B.S. 1945, M.S. 1950, The George Washington University
Brown, Fitzhugh Lee Va
A.B. 1954, Harvard University
Brown, Frank David Ohio
Brown, Geoffrey John Hatton England
Brown, George Edgar, Jr. D.C
A.B. 1947, Harvard University
Brown, Harry Silsby, Jr. Mo.
A.B. 1952, University of Missouri
Brown, Joan Lucille D.C.
Brown, Joe Ellsworth Md
Brown, John Joseph, Jr. Va.
B.S. 1953, American University
Brown, Joseph Manson, Jr. Md
B.S. 1942, The Citadel
Brown, Julian Mitchell Md.
A.B. 1953, University of Georgia
J.D. 1955, The George Washington University
Brown, Lee Berry Md
Brown, Lee Roy, Jr. Ohio
B.S. 1950, University of Alabama
Brown, Lee Thurmond D.C.
Brown, Leonard David Ohio
B.S. 1951, Bowling Green State University
Brown, Lorraine Frances D.C
Brown, Margaret Catherine Va.
Brown, Margaret Isabel D.C.
A.B. 1954, University of Michigan
Brown, Margaret Lucille Va
A.B. 1951, The George Washington University
Brown, Marion Louise D.C.
B.S. 1955, Howard University
Brown, Marjorie T. D.C.
Brown, Marvin Joel Ind.
Brown, Michael Edward D.C.
Brown, Miles Jerome Va
A.B. 1942, Swarthmore College
Brown, Morton Nathan D.C.
Brown, Norma Joyce N.C.
Brown, Ola Artilia D.C.
Brown, Oril Irene N.D.
B.S. 1930, Northwestern University
A.M. 1951, The George Washington University
Brown, Paul Franklin Md.

Brown, Raymond — Md.
B.S. 1948, Buffalo Teachers College
A.M. 1948, The George Washington University

Brown, Richard Lovett — Mass.
A.B. 1955, Princeton University

Brown, Robert Guy — D.C.

Brown, Ronald Lawson — Va.

Brown, Roscoe Delano — Ark.
A.M. 1952, George Peabody College for Teachers

Brown, Ruth Elizabeth — D.C.
A.B. 1941, University of Alabama

Brown, Samuel Edward — Va.

Brown, Samuel Heffner — D.C.

Brown, Shelley Marjorie — D.C.

Brown, Thomas Jerald — D.C.

Brown, Vesta Elizabeth — D.C.
A.B. 1945, The George Washington University

Brown, Walter Lee — D.C.

Brown, William Brigham III — D.C.

Brown, William Edward — Va.
A.B. 1954, Whittier College

Brown, William Garrison — D.C.

Brown, William M — Md.

Brown, William R., Jr. — Ga.
A.B. 1[illegible], Oglethorpe University

Brown, William Stuart — D.C.
B.S. 1951, M.S. 1952, Iowa State College

Brown, William Theodore — Va.

Browne, Blanche Gutowski — N.J.

Browne, David Bates — Va.
E.E. 1948, University of South Carolina

Browne, Marjorie Ronald — Md.

Browne, Richard Allen — Md.

Browne, William Robert — Ark.
B.C.E. 1950, Cornell University

Browning, Joe Leon — Md.
B.S. 1947, Marshall College

Brownlee, Evelyn Arlene — Calif.

Bruce, James William — Va.

Brugler, Daniel Lewis — Va.
A.B. 1947, University of Wisconsin

Bruggeman, John Meinrad — Pa.

Brumbaugh, James Lutman — Mont.

Brune, William Gregory — Md.

Brunenkant, Gloria Agnes — Va.

Bradley, Albert Henry — D.C.

Bradley, Dora Severe — D.C.

Brumback, Donald Eugene — Va.

Brumbaugh, Edward James — Va.

Bruno, Betty Ann — Calif.
A.B. 1953, Stanford University

Bruno, Mary Constance — Md.
A.B. 1950, Trinity College
A.M. 1952, Catholic University of America

Bruns, Henry Bernard — Md.

Brunswick, Charles Edward — Va.

Brunswick, Richard Ellsworth — Va.

Brunt, Sherrard Vail Cleef — Va.
A.B. 1941, University of Alabama

Brust, Nora Mae Tompipoe — D.C.

Bryan, Agnes Leslie — Va.
B.S. 1927, The George Washington University

Bryan, Albert Daniel, Jr. — Okla.

Bryan, Billie Marie — D.C.
A.B. 1954, Westhampton College

Bryan, Robert Waitman — D.C.

Bryan, William Barnes III

Bryant, Charles Reed
A.B., A.M. 1950, George Peabody College for Teachers

Bryant, Homer Marshall
B.S. 1949, Lynchburg College
Ed.M. 1953, University of Virginia

Bryant, Norman Horace

Bryant, Robert Singleton
B.S. 1954, The George Washington University

Bryden, James Davenport, Jr.
A.B. 1[illegible], College of William and Mary

Bryer, Richard Harry
B.C.E. 1948, Clarkson College of Technology

Bryson, Samuel Zollicoffer III
B.S. 1[illegible], University of Maryland

Bucci, Dominick Anthony

Buchanan, Charles Allen
B.S. 1926, U.S. Naval Academy

Buchanan, Charles Seminoe
B.S. 1941, University of Oklahoma

Buchanan, Esther James

Buchanan, Margaret Robinson
B.S. 1926, Miner Teachers College

Buchholz, Edward Walter

Buchmann, Brigitte Klara
A.B. 1954, The George Washington University

Buck, Donald Alden

Buck, Robert Max
B.S. 1944, Worcester Institute of Technology

Buck, Walter Joseph
B.S. 1953, Loyola College

Buchsbaum, David Herman

Buckley, Brian Brooks
A.B. 1[illegible], University of Pennsylvania

Buckley, Sally Mitchell
A.B. 1952, Douglass College

Buckley, Helen E.

Buckley, James Joseph
A.B. 1952, St. Anselm's College

Buckley, Merrill William, Jr.
B.S. in E.E. 1949, Villanova University
M.S. in E.E. 1954, University of Pennsylvania

Buckley, Robert Baldwin
B.S. 1942, The George Washington University

Buckmaster, George Walton
A.B. 1[illegible], The George Washington University

Buckmaster, Wilma Ruth

Budge, Dorothy Helen

Budlong, Marion
B.S. 1[illegible], University of California

Budlong, Robert Ray

Buel, Mary Elizabeth Neal
B.S. 1[illegible], West Virginia Teachers College

Buell, Bruce Temple
A.B. 1953, Princeton University

Buell, James Rufus
B.S. 1[illegible], University of Kentucky

Buffington, Charles Joseph

Bukaguat, Marion J.
A.B. 1[illegible], Hunter College

Bukovitz, Georgiana Sylvia

Bulger, Mary Catherine Ill.
A.B. 1947, University of Chicago
Bull, James Clifford
Bullard, Alaine Margaret Ohio
A.B. 1946, The George Washington Md.
University
Bullock, Joseph Jay
B.S. 1954, Brigham Young University Utah
Bullock, Margaret Camille
Bundy, Clifford Wilcom D.C.
B.S. 1948, U.S. Naval Academy S.D.
M.S. 1947, Massachusetts Institute of Technology
Bunke, John William
Bunker, Kenneth John Wis.
Bunn, Rita Sueber Md.
Bunor, Joseph Stanley N.C.
Burgess, Thomas Lemon Pa.
B.C.E. 1949, Mississippi State College Va.
Bunting, Curtis Watson
B.S. 1947, University of Illinois Mich.
Bunting, Henry Paul
B.S. 1950, New York University D.C.
Buravapara, Pandit
Buscaglia, Hugo Vincent Thailand
Busono, Robert David N.Y.
Burak, Alex Mass.
A.B. 1950, Franklin and Marshall Pa.
College
Burak, Stanley
B.S. 1950, The George Washington Md.
University
Buran, David John
A.B. 1953, Carleton College Va.
Burch, Vivian Lemke
Burchard, Duncan Riggs D.C.
Burchard, Roger Donald D.C.
Burckes, Thomas Martin III Md.
B.S. 1954, University of Maryland D.C.
Burkhalter, Beverly Ada
Burdett, Melvin D.C.
Burdette, Barbara Ann D.C.
Burge, David Clark D.C.
Burgess, Harry Franklin Va.
B.S. 1951, University of Maryland Md.
Burgelbach, James Peter
B.Ch.E. 1950, University of Detroit Ill.
M.S. in Ch.E. 1951, Northwestern University
Burer, Arthur William
Burford, Frances Oerlein D.C.
A.B. 1954, The George Washington D.C.
University
Burgess, Carl C.
Burgess, James Earle N.C.
Burgett, Charles Lincoln Va.
B.S. 1947, Ball State College Va.
Burgos, Jennie Batchelor
Burgoyne, Rodney William D.C.
B.S. 1954, Utah State Agricultural Idaho
College
Burka, Frances Kossow
Burkart, Helen Bridget Va.
Burke, David William Maine
B.Arch.Eng. 1955, Catholic University Md.
of America
Burke, Frances Veasey
Burke, John Grant Md.
A.B. 1950, The George Washington Va.
University
Burke, Mary Frances
Burke, Patricia Michele W.Va.
Va.

Burkhardt, Albert Pennewell, Jr. Va.
A.B. 1951, Temple University
Burkhardt, Robert Regis Va.
Burkman, Donald Clifford Md.
B.M.E. 1948, University of Minnesota
Burks, Crawford Skinner Va.
B.S. 1941, Hampden-Sydney College
A.M. 1952, The George Washington University
Burleson, Charles Allen, Jr. Md.
A.B. 1943, Dartmouth University
Burlingame, Charles William Md.
B.S. in E.E. 1950, University of Houston
Burman, John Richard Md.
Burnet, Arthur Russell D.C.
A.B. 1922, Oberlin College
Burnett, Hellen Marie Okla.
B.S. 1948, Texas State College for Women
Mus.M. 1949, University of Oklahoma
Burnett, James Ambrose Md.
Burnham, Bruce Franklin D.C.
B.S. 1953, M.S. 1954, University of Utah
Burnham, Julia McQuarrie D.C.
Burns, Bland Calvin Va.
B.M.E. 1950, The George Washington University
Burns, Carl Ray Va.
A.B. 1948, Simpson College
A.M. 1949, University of Iowa
Burns, Charles Lemar Md.
Burns, Hobart Sloan S.C.
Burns, James Joseph Va.
Burns, John Joseph Pa.
B.S. 1952, Pennsylvania State Teachers College, Bloomsburg
Burns, Paul D.C.
A.B. 1949, The George Washington University
Burns, Robert Emery D.C.
Burns, Rollin Lee Md.
A.B. 1932, Wheaton College
A.M. 1935, Princeton University
Burns, Thomas Lawrence Va.
A.B. 1941, Canisius College
Burns, Wendell Eskridge D.C.
B.S. 1952, Washington and Lee University
Burri, Dorothy Louise Va.
Burrill, Robert Meredith Md.
Burris, Jean Lucy Md.
Burroughs, John Charles Md.
Burrow, William Gordon N.Y.
Burrows, Helen Ruth Mass.
Burstein, Alvin George D.C.
A.B. 1950, University of Chicago
Burt, Alethea Anne D.C.
B.S. 1953, Hampton Institute
Burtnick, Beverly Miller D.C.
A.B. 1945, Goucher College
Burtnieks, Agnes D.C.
Burton, Bessie Eileen Va.
A.B. 1954, Kent State University
Burton, Bonnie D.C.
Burton, Jane Cameron D.C.
Burton, John Howard Va.
B.S. 1941, Rutgers University
Burton, Joseph Chandler D.C.
B.S. 1928, Alabama Polytechnic Institute
J.D. 1931, University of Chicago

Burton, Marilyn Louise — Va.
B.S. in Ed. 1953, Kent State University
Burton, Peter John — N.J.
Burton, Robert Corry — W.Va.
Burton, Sarah Justine — D.C.
Bustram, Karl Marx — Ala.
Bustos, Mercedes — D.C.
Buser, Elizabeth Anne — D.C.
A.B. 1948, The George Washington University
Bush, Dan Porter — Md.
B.S. in E.E. 1952, South Dakota School of Mines and Technology
Bush, Eleanor Louise — D.C.
Bush, Millard Mansdell — D.C.
A.B. 1950, LL.B. 1951, University of Mississippi
Bushey, Richard James — N.Y.
Bushnell, Robert Cook — Va.
Bussey, Louise Frank — Md.
Bussard, Ethel Marie — D.C.
Busse, Ellen Marie — Ind.
Bussert, Martin Joseph — Va.
Bussey, Donald G. — Calif.
Bustos-Videla, Cesar — D.C.
Butcher, Beatrice Bowen — D.C.
A.B. 1933, A.M. 1935, Howard University
Butera, Charles William — D.C.
B.S. 1952, Georgetown University
Butland, Gloria — D.C.
Butler, Bette Jane — Va.
Butler, Charles Arnow — Fla.
Butler, Constance Carolyn — N.Y.
B.S. 1952, Barnard College
Butler, Don Lanzie — D.C.
Butler, George Robert — Md.
B.S. 1954, University of Maryland
Butler, Margaret Newman — Colo.
A.B. 1942, A.M. 1948, University of Denver
Butler, Norman — D.C.
B.S. 1952, Agricultural and Technical College of North Carolina
Butler, Peter Kane — D.C.
Butler, Raymond Kenneth — Va.
A.B. 1948, University of Richmond
Butler, Robert Milton — D.C.
Butler, Roger Vernon, Jr. — Va.
B.M.E. 1951, Louisiana Institute of Technology
Butterfield, Charles Henry — N.H.
A.B. 1954, University of New Hampshire
Butterfield, Franklin Herman — Utah
B.S. 1949, University of Utah
Buttenwieser, Benjamin Kaufler — D.C.
Buttram, Philip Alton — N.M.
Buttram, Phyllis Lee — D.C.
LL.B. 1949, The George Washington University
Byer, Seymour — Conn.
B.S. 1951, M.S. 1952, The George Washington University
Byerly, David Stevens — Md.
A.B. 1953, University of Virginia
Byerly, Marian Reeves — D.C.
A.B. 1951, Dunbarton College of the Holy Cross
Byers, John Booth — D.C.
Byers, William Bartolett, Jr. — Pa.
A.B. 1954, Ursinus College
Byhre, John Paul — Wis.

Byrd, Richard Jackson
Byrne, Betty Ann — W.
B.S. 1955, Queens College
Byrne, Eugene Watson — Va.
B.S. 1954, University of Maryland — D.C.
Byrne, James Joseph
Byrne, John Andrew — Va.
B.S. in B.A. 1949, Babson Institute of Business Administration — Md.
Byrne, Richard Joseph
Byrne, Robert Joseph — Va.
D.V.M. 1944, Cornell University
Byrnes, Peter Joseph — D.C.
A.B. 1953, University of Idaho
Byron, Alexander — D.C.
A.B. 1953, Duke University — Md.
Byron, Joseph
Byron, Sedgwick Rice

C

Cabelus, Thomas Joseph, Jr. — D.C.
A.B. 1953, Syracuse University — Md.
Cable, Charles Meredith — Va.
A.B. 1942, Southwestern University
Cable, Donald Aubrey — Va.
A.B. 1949, Lake Forest College — Ohio
Cable, Joan Beatrice
Cadwallader, William Rayburn — Va.
A.B. 1954, University of Cincinnati — Va.
Cady, Alice Lee
Caffrey, Charles Augustine — Md.
A.B. 1952, Wilkes College
Cahoon, Lynda Lee — Md.
A.B. 1954, The George Washington University
Cain, John Wallace — D.C.
A.B. 1955, The George Washington University — D.C.
Caima, Julie Ann — Pa.
Caixouros, John
Calapristi, Anthony Francis — Columbia S.C.
B.S. in Ch.E. 1940, Villanova College
Calderon, Alfonso — D.C.
Caldwell, Joseph Alton — D.C.
B.S. 1949, University of South Carolina — Va.
Caldwell, Lee Arthur
Caldwell, Mary Caroline — Md.
Calhoun, Frances Mitchell
A.B. 1955, Hollins College
Calhoun, James Dean — Ind.
B.S. 1947, Franklin and Marshall College — Va.
Ed.M. 1951, Pennsylvania State University
Calhoun, James Robert
B.S. 1948, University of California
Calhoun, William Evans — D.C.
A.B. 1950, Houghton College
B.D. 1953, Eastern Baptist Theological Seminary
Calingo, Mauro — D.C.
LL.B. 1933, University of the Philippines — N.H.
Calio, Richard Anthony — Miss.
Call, Russell John
Callaghan, Richard Lawrence — Va.
B.S. 1950, Georgetown University — Va.
Callaham, Joseph Willard — Md.
Callan, Paul Jerome
Callander, Donald Bruce
Callas, Peter George — Va.
A.B. 1949, Ed.M. 1955, Western Maryland College
Callaway, Fay Elizabeth

Callaway, Robert Lee — D.C.
A.B. 1950, University of Maryland
Callcott, Penelope — D.C.
A.B. 1949, Johns Hopkins University
LL.B. 1951, University of Honduras
Callmann, Dorothea — D.C.
A.B. 1955, Bennington College
Callow, Leslie Hathaway — Va.
Calloway, James Richard — Del.
Calnon, Jean Patterson — D.C.
Camagni, Hero Lamberti — D.C.
A.B. 1945, Wheaton College
Cameron, Nancy Mackay — D.C.
B.S. 1953, M.S. 1954, The George Washington University
Cameron, Donna Ann — D.C.
Cameron, Elizabeth Bemiss — Va.
A.B. 1951, Vassar College
Cameron, Miriam Kelly — Va.
B.S. in Ed. 1951, Temple University
Camp, Sylvia Holmes — D.C.
Campagna, Ignatius Edward — Va.
Campagna, Joseph Jean, Jr. — D.C.
Campany, Carl Owen — Miss.
Campbell, Alexander Edward — Md.
Campbell, Alexander Spotswood — D.C.
Campbell, Anthony Dibrell — N.M.
A.B. 1949, University of Texas
Campbell, Celeste Ann — D.C.
Campbell, Charles Edwin — Ky.
Campbell, Claire Christine — N.J.
Campbell, Constance Joan — Va.
Campbell, Doris Lee — D.C.
A.B. 1954, Catholic University of America
Campbell, Donald Allen — Idaho
Campbell, Edward Walter — Mich.
Campbell, Elaine Bradshaw — D.C.
A.B. 1943, University of Georgia
Campbell, Earrise Archie — Va.
Campbell, Emmett Lee — Va.
Campbell, Harry Lee — Va.
B.S. in Elec. 1917, Michigan State University
Campbell, James Richard — Md.
B.S. in Ed. 1944, Ohio Northern University
Campbell, John David III — D.C.
A.B. 1954, University of California at Los Angeles
Campbell, Mary Margaret — D.C.
Campbell, Moses Collier — Md.
Campbell, Palmer — Va.
Campbell, Scott V. — Va.
Campbell, Seme Ronald — Fla.
Campen, Rudolph — Va.
Campitell, Joseph Paul — Md.
B.S. 1951, Pennsylvania State Teachers College, Shippensburg
Camus, Edward Fouard — Md.
B.S. 1951, University of Maryland
Canady, Donald Wellington — Ill.
B.S. 1951, University of Maryland
Canby, Thomas Yeiloff, Jr. — Md.
A.B. 1952, University of Virginia
Candish, George Wallace — Md.
Candler, John Vincent — D.C.
Canine, Edwin Arnold — Md.
A.B. 1951, University of North Carolina
Cannizzaro, Inez Adrienne — D.C.
A.B. 1935, Western Reserve University
Canton, John Andrew — Md.
Cannon, John Whitney — Md.
Canter, Lorraine Lloyd — N.Y.
Cantor, Hilda Schumacher — Va.
Cantrell, Robert Wyndal — Mo.
Capan, Ann Marie — D.C.
B.S. in F.S. 1954, Georgetown University
Capell, Dorman Maynard — N.J.
Capers, Jo Bonnell — Ida.
Capitano, Armando — N.Y.
Cappello, Mary Edward — D.C.
B.S. in Ed. 1948, Temple University
Capps, William Frederick, Jr. — S.C.
Caprio, Anna Irene — Va.
Caprio, Ferdinando Joseph — Va.
Caputo, Vincent Lawrence — Md.
Carbaugh, Joseph John — Md.
Carbonette, Vera Lamont — Miss.
B.S. 1953, U.S. Coast Guard Academy
Carcione, Edward John — N.J.
B.S. in Ed. 1954, Duquesne University
Carcterera, Dionisio — D.C.
B.C.E. 1934, College of the City of New York
Cardamone, Anthony — Va.
B.S. 1954, Winona Teachers College
Cardy, George James — D.C.
Carey, Norine Claire — D.C.
Carey, Rose Marie — D.C.
Carey, William Theodore, Jr. — Va.
Carlough, Raymond J. — N.J.
Carlson, Thomas Anthony — Conn.
Carlo, Joseph — N.Y.
B.B.A. 1950, College of the City of New York
Carmichael, Joseph Louis — W.Va.
A.B. 1943, West Virginia University
Carlson, Astrid Margareta — D.C.
Carlson, Dexter Harold — Va.
A.B. 1950, Gustavus Adolphus College
B.D. 1954, Augustana Theological Seminary
Carlson, Frederick Freeman — D.C.
Carlson, Herbert Emanuel — Md.
Carlson, Leonard Rafael — D.C.
A.B. [illegible] 1951, Michigan State College
Carlson, Lois McLennan — Va.
Carman, Mary Ann — D.C.
Carman, Mary Harrington — Nev.
A.B. 1948, The George Washington University
Carlson, Reed Earle — Calif.
A.B. 1951, Stanford University
Carmichael, Louis Leslie, Jr. — Ala.
A.B. 1951, Vanderbilt University
A.M. 1952, Columbia University
Carnahan, William Edward — Va.
Carnal, Robert Bond — Va.
Carnes, Lucretia Edith — D.C.
Carnes, Thomas Lee — Va.
Carney, Francis Leslie, Jr. — D.C.
A.B. 1954, Clark University
Carnes, Helen Ann — N.Y.
B.S. 1953, Syracuse University
Caro, Jose Augusta — Md.
Caron, Anna Mae — Ohio

Carpenter, Anne Care — Pa.
A.B. 1946, Vassar College

Carpenter, Dorothy Jean — D.C.
B.S. in Ed. 1950, Maryland State Teachers College, Towson

Carpenter, Edwin Tobin, Jr. — N.Y.
A.B. 1952, The George Washington University

Carpenter, Lisa Bard — Md.

Carpenter, Margaret Gibson — D.C.

Carpenter, Patricia Ann — Md.
A.B. 1953, University of North Carolina

Carpenter, Richard Hatton — Mass.
B.S. in M.E. 1954, Purdue University

Carpenter, Simon Lawrence — Va.
A.B. 1952, University of Virginia

Carpenter, William Otis — D.C.
A.B. 1951, The George Washington University

Carpino, Salvino Francis — Mass.
A.B. 1950, The George Washington University

Carr, Lawence Barrows — Calif.
A.B. 1953, Stanford University

Carr, Marietta — D.C.
B.S. 1947, University of New Hampshire

Carras, Andrew Nicholas — D.C.
B.M.E. 1954, College of the City of New York

Carrera, Anna Ferreira — R.I.
B.S. 1951, University of Rhode Island

Carrington, Donald Russell — Va.
A.B. 1948, Gettysburg College

Carroll, John Edward, Jr. — Md.

Carroll, John Hugh — Mass.
A.B. 1947, Providence College
A.M. 1952, Georgetown University

Carrow, John Joseph — N.Y.
B. Arch. Engr. 1950, Catholic University of America

Carroll, Leonard Paul — Va.

Carroll, Michael Leo — D.C.
A.B. 1938, University of Scranton

Carroll, Neil Lewis, Jr. — D.C.

Carroll, Nicholas Vincent — Pa.
B.S. 1948, Geneva College
M.S. 1955, The George Washington University

Carroll, Nina Teresa — Va.

Carroll, Paul Francis — Mo.
B.S. 1948, University of Missouri

Carroll, Richard James — D.C.

Carson, Daniel Arthur — D.C.

Carson, Dorothy Ann — Md.

Carson, Joyce Ann — Md.

Carson, Mary — Va.
A.B. 1929, University of New Hampshire

Carstenson, Joan Joy — D.C.
B.S. in Ed. 1954, Ohio State University

Carter, James Willard — Ga.
B.S. 1948, Georgia State Teachers College, Collegeboro

Carter, Albert LeRoy — Va.
B.S. 1951, Purdue University

Carter, Carlos Owen — N.Y.
A.B. 1950, Harvard University

Carter, David Irwin — Va.
B.S. 1950, University of Virginia

Carter, Emma Manning — D.C.
A.B. 1955, Howard University

Carter, Frederic Lee — D.C.
A.B. 1951, Catholic University of America

Carter, Janet Galloway — Va.
A.B. 1953, Mary Washington College

Carter, Janet Gordon — D.C.
A.B. 1954, University of North Carolina

Carter, Janice Ann — Va.

Carter, Marjorie H. — D.C.
B.S. 1947, Miner Teachers College

Carter, Myrtle Helen — Va.

Carter, N. Ray — Ind.

Carter, Robert Barnhill — Md.
B.S. 1951, U.S. Naval Academy

Carter, Robert Lyman — D.C.
B.S. 1952, Temple University

Carter, Thelma May — Va.

Carter, William Douglas — Va.

Carlson, Joan Barbara — Ill.

Carvellas, Perry — Va.
B.S. 1952, The George Washington University

Carver, Elizabeth Wing — Va.

Carver, Harry Swentzel
A.B. 1955, College of William and Mary

Carver, Oliver Thomas — S.C.
B.S. in E.E. 1949, West Virginia University

Carver, Roy Edmond — Va.

Carwithen, David Courtney, Jr. — Va.

Cary, Carolyn Ray — Germany
B.S. 1951, Kansas State Teachers College

Casas, Antonio — Colombia
A.B. 1955, The George Washington University

Casas, Jorge Herman — D.C.

Case, Jane Marie — Va.

Case, Mary Alice — Md.

Case, Raymond Harlan — Ohio
B.S. 1951, University of Minnesota

Casey, Ann Donnelly — Hawaii

Casey, Brian Leo — Va.
A.B. 1948, Northeastern University

Casey, Charles Whitney — Md.

Casey, Eugene Wendelin — Wash.

Casey, Florence Broderick — D.C.

Casey, Frances Theoxina — Va.

Casey, John Hugh — Va.

Casey, Leland Limes — Pa.
B.M.E. 1948, B.B.A. 1942, University of Minnesota

Casey, Robert Patrick — Ill.
A.B. 1950, College of the Holy Cross

Casper, Morris Herbert — Va.

Cass, Barbara Lee — Va.

Cass, Nathan — N.Y.
B.B.E. 1952, New York University

Cassell, Sanford Charles — D.C.
B.S. in C.E. 1952, University of Maryland

Cassidy, Carmel Martha — Va.

Cassidy, George Maitland — D.C.

Cassidy, Joan Katheryn — N.Y.
A.B. 1949, Queens College

Cassidy, Thomas James — Va.

Castanza, Angelo Nicholas

Castell, Donald Overton — Md.
Castello, Mary Whitney — D.C.
Castle, Alfred Barkley, Jr. — Md.
Castronovo, Felicia May — D.C.
Caswell, Carol Patricia — Va.
Caswell, John Lewis — D.C.
B.S., 1950, U.S. Merchant Marine Academy
Cates, Alton Paschal
Catoe, Christopher — Va.
Caton, Helene Watson — Va.
A.B. 1935, Marshall College
Catterton, Edward Lee — D.C.
Catterton, Flov Shop
Caudle, Hubert Howard — D.C.
Caudmas, James Alan — Va.
Causeade, Wilfred — Va.
Cauthorne, Helen Marcel — D.C.
Puerto Rico
A.B. 1927, M.S. 1954, Virginia State College
Cavallo, Guido Anthony — D.C.
A.B. 1950, The George Washington University
Cavanaugh, Francis Xavier — Va.
A.B. 1954, Northeastern University
Cavanaugh, James A. — Mass.
Cavanaugh, John Paul — Va.
Cavanaugh, Margaret Ann — Pa.
A.B. 1951, Seton Hill College
Cavanaugh, Mary Frances — Pa.
Cavanaugh, William Bernard — Pa.
B.S., 1952, University of Maryland
Cave, Charles Lee, Jr. — Md.
Cawood, Charles Maclane — D.C.
Cave, Albert — Va.
Cebollero, Manuel — Md.
B.M.E., 1951, The George Washington University — D.C.
Cepon, Mary Dolores — Ill.
B.S. in Ed., 1951, Northern Illinois State Teachers College
Cerick, Peter Adil — D.C.
A.B. 1953, The George Washington University
Cernuto, Fortunato Louis — Va.
Cerny, Matthew John, Jr. — N.Y.
A.B. 1954, Johns Hopkins University
Chabon, Robert Selwyn
Chadwell, Powell Clayton — D.C.
Chamas, Justo Garson — D.C.
Chamberlain, Margaret Mary — D.C.
Chamberlain, Muriel Ruth — D.C.
A.B. 1935, B.F.A. 1936, M.F.A. 1937, The George Washington University — D.C.
Chamberlaine, Harriet Anne
Chamberlin, Louise Ingalls — W.Va.
A.B. 1946, Bryn Mawr College — Ill.
A.M. 1950, University of Chicago
Chamberlin, Terrel Roger
Chambers, Bernice Brown — Va.
A.B. 1943, University of Maryland — D.C.
A.M. 1946, George Peabody College
Chambers, Edward Francis
Chambers, Francis William, Jr. — D.C.
B.S. in E.E. 1934, Georgia Institute of Technology — Ga.
Chan, Dorothy May
Chan, Raymond — D.C.
Chan, Suseng Ku — Calif.
A.B. 1952, National Taiwan University, Formosa — D.C.

Chan, Tong Tong — D.C.
Chan, Tong Wang — D.C.
Chan, Tov Ping — D.C.
Chan, Trinh Van — D.C.
Chance, Anthony Nicholas — D.C.
Chance, Shirley Anne — Ohio
A.B. 1954, Bowling Green State University
Chandler, Carlton Francis — N.C.
Chandler, Charles Allen — D.C.
B.S. 1951, Agricultural and Technical College of North Carolina
Chandler, Charles Robert — Mich.
Chandler, William Booth — D.C.
Chaney, John Lester, Jr. — D.C.
A.B. 1953, The George Washington University
Chang, Lee Tzu — Md.
Chang, Pak Kun — China
Chang, Yong Kon — Korea
Channing, Christopher Stephen — Fla.
B.S. 1945, U.S. Coast Guard Academy
Channon, Kenneth Frank — Md.
Chanslor, William Alfred — Va.
B.B.A. 1952, University of Houston
Chapin, Lee West — Fla.
A.B. 1955, Duke University
Chapman, Eileen Bernadette — Md.
Chapman, John Byrd — Md.
Chapman, John Leonard — D.C.
Chapman, Katheryn Dawsey — Md.
A.B. 1941, The George Washington University
Chapman, Marian Louise — Va.
A.B. 1949, University of Michigan
Chapman, Raymond Earl — Mich.
A.B. 1932, A.M. 1934, Kalamazoo College
Chappelear, James Allen — Md.
Chardon, Ruth Hilda — D.C.
Charles, Cecil Marvin — D.C.
Charles, Jack Wood — D.C.
A.B. 1940, High Point College
Charleston, Alexander Edward — Calif.
B.S. 1950, University of California at Los Angeles
Charlesworth, George Herbert — Md.
A.B. 1938, Hampden-Sydney College
A.M. 1946, University of California at Los Angeles
Charlesworth, Harold Karr — Va.
A.B. 1939, Carleton College
M.B.A. 1942, University of Michigan
Ph.D. 1950, University of Wisconsin
Charlton, Walter Theodore — Md.
B.S. 1952, University of Maryland
Charlwood, Reginald Edward — Md.
Charnley, Phyllis Ann — Va.
Charvat, Dorothy Ellen — Va.
Chase, Elizabeth Anne — Md.
Chasnov, Edith Kleinberg — Va.
B.S. 1945, New York University
Chassan, Jacob B. — Md.
B.S. 1939, College of the City of New York
A.M. 1949, The George Washington University
Chatfield, Wanda Wray — Md.
Chatlin, Gerald Morris — D.C.
B.S. in Phar. 1954, The George Washington University
Chatoor, Ramcoomar — Trinidad

Chivarrie, Edgar Anthony — Calif.
A.B. 1932, University of Southern California

Chavez, Joseph James — Va.
Chavis, Kelly Lewis — Ill.
LL.B. 1915, DePaul University

Chevalier, Anthony P. — D.C.
Chevalier, Grace Ethel — D.C.
Chichester, George Thomas — Va.
Chidlaw, Percy John — Ill.
Chieffo, Robert Lee — D.C.
Chin, Arnold Shoot — D.C.
Chin, Lawrence Le An — D.C.
Chin, Linda Ping — D.C.
Chin, Sylvia Henry — D.C.
A.B. 1948, Ginling College, China

Chin, William Tung Yung — D.C.
S.B. 1938, Manchester College

Ching, Hsiao Sung — D.C.
A.B. 1946, Tsing Hua University, China
A.M. 1953, The George Washington University

Chipman, Claire Lee — Va.
Chisum, Clint Cox — D.C.
A.B. 1951, The George Washington University

Chizmar, Helen Ruth — D.C.
Chmouliar, Paul — D.C.
A.B. 1947, University of Michigan
A.M. 1950, The George Washington University

Cherry, John Clayton — Va.
B.S. 1951, The George Washington University

Cherwek, William George — Mass.
Chesley, Allan Rickard — Md.
Chesney, Donald R. — D.C.
Chester, Raymond Michael — Conn.
Chetwin, Wing See — Hong Kong
Chevalier, Helen Werner — D.C.
Chew, Henry Rolland — Va.
A.B. 1926, University of Virginia

Chewning, Connie Emmett — Va.
Chichester, Julia Pollock — Md.
Chi, Hsiang Tao — D.C.
Chi, Yun Il — Korea
Chico, Antonio M., Jr. — Ariz.
Childers, Marvin Dale — Va.
Childress, Nancy — Md.
Chilton, Arthur Broadus — D.C.
Chilton, Monroe Ira — N.Y.
Chin, Gay — Va.
B.S. 1948, Oregon State College

Chinnery, Sophia Marie — N.Y.
Chinoleon, Joseph Philip — D.C.
Chitwood, Andrew John — Pa.
Chittenden, Robert Hogue — D.C.
B.E.E. 1950, Georgia Institute of Technology

Chinn, Virginia Lee — D.C.
Chlumsky, Lawrence Albert — Va.
Chmiola, Paul Wayne — Pa.
Choate, Marjorie Susan — D.C.
Choe-ngarm, Pramot — D.C.
Diploma 1951, Thammasastra University, Thailand

Chocronne, George Maxime, Jr. — Calif.
A.B. 1949, Assumption College

Choiniere, Allan Isadore — Md.
A.B. 1947, Pennsylvania State University
M.Ed. 1951, University of Pittsburgh

Chow, Chien — D.C.
B.S. 1937, Chiao-Tung University, Shanghai

Chow, Pao-ju Liu — D.C.
Chowning, Carolyn Davis — D.C.
Christ, Grant — D.C.
A.B. 1948, A.M. 1951, Middlebury College

Christ, Hildegard Berta — D.C.
Christen, Clare Marie — Ohio
Christian, Leonard Darold — D.C.
B.M.E. 1950, The George Washington University

Christian, Peggy Percival — D.C.
Christie, Alexander Knox — Md.
B.S. 1950, New York University

Christie, Peter — N.J.
Christie, Robert Charles — D.C.
Christmas, Andonesa — Va.
B.S. in Ed. 1951, Madison College

Christou, Alexander George — Ohio
Christopp, Helen Jeanne — Mo.
A.B. 1949, University of Missouri
B.S. 1951, Washington University

Chrisley, Lowell Francis — Va.
B.S. 1950, Georgetown University

Chromiec, William J. — Md.
Chrulay, Gene P. — Ohio
A.B. 1952, Ohio University

Chua, Geaney Myaing — D.C.
A.B. 1952, Washington University

Chuang, Charlotte Yu Jen — D.C.
Church, Cornelia L. — Va.
Church, Edna Eugene — W. Va.
A.B. 1941, West Virginia University
D.D.S. 1944, University of Maryland
M.S. 1948, The George Washington University

Church, Mandy Chitta — N.Y.
Ciak, Jeanne — Mass.
B.S. 1948, Nazareth College
M.S. 1951, Catholic University of America

Ciancioso, Cesar A. — Va.
B.S. in Ed. 1952, Villanova College

Ciarlo, William Bernard — Md.
Ciesla, Rudolph Alan — D.C.
Cieslewicz, Leonard Francis — D.C.
Cieslinski, Alfred — Va.
A.B. 1932, Washington and Jefferson College

Cifelli, Richard Charles — D.C.
Cihlar, Irene Ann — Va.
Cilento, Alan John — D.C.
Cimbolic, Ruth L. — D.C.
Cimino, Louis Ivan — D.C.
Cinco, Francisco Lontoc — D.C.
B.S. 1951, A.M. 1952, The George Washington University

Cipriani, Nancy Wardell — D.C.
Cissell, Donald Eugene — Md.
Citrenbaum, Louis Albert — Va.
Citrenbaum, Cecil Flowers — Ohio
Claggett, Robert Rodman — D.C.
B.S. 1948, Howard College

Claiborne, Harold Gilmer — Va.
Clancy, Philip Christopher — N.Y.
Clark, Arthur Day — Va.
B.S. 1949, Mount Teachers College

Clark, Ethel Cranford — D.C.
B.S. 1952, Davidson College

Clark, Gilbert Reed — Md.
B.S. 1951, University of Maryland

Clark, Gordon Lovell Md.
B.S. in E.E. 1932, Tufts College
Clark, James Daniel
Clark, James Henry Va.
Clark, John Ray Va.
Clark, Kathryn Orpha D.C.
A.B. 1944, University of Washington
A.M. 1951, University of Minnesota
Clark, Lyn Henderson
A.B. 1954, The George Washington University D.C.
Clark, Malcolm Cameron
A.B. 1953, The George Washington University D.C.
Clark, Marilyn June
A.B. 1955, The George Washington University D.C.
Clark, Patricia Ann
Clark, Roland Ellis D.C.
Clark, Ruth Ann Md.
A.B. 1951, Wellesley College D.C.
Clark, Walter Cross, Jr.
Clark, Wiley D.C.
Clark, Victoria Chaapel Md.
B.S. 1929, Columbia University D.C.
Clarke, Alice Louisa Harrison
A.B. 1928, The George Washington University D.C.
Clarke, Bethl Patrick
Clarke, Edward Owen, Jr. D.C.
A.B. 1951, Loyola College Md.
Clarke, Frank Duval
Clarke, Gordon Howe Va.
A.B. 1954, Pomona College Calif.
Clarke, James Brett, Jr.
LL.B. 1953, The George Washington University Va.
Clarke, Jane Patricia
A.B. 1953, Columbia University N.Y.
Clarke, Walter Sheldon
Clarke, Dunbar Marvin Md.
B.E.E. 1926, Cornell University Va.
Clary, Peter White, Jr.
Class, Clayton I. Md.
Claussen, Dean Sutter Fla.
Claussen, Carol Jean D.C.
Clay, Barbar Nell D.C.
Clay, Ronald Orvel D.C.
Clayman, N. Clifford Fla.
Claymore, Lee Herman Va.
Claypool, Richard Clayton Pa.
Clayton, Claire D.C.
Clayton, Dorothy Hobrecht D.C.
Clearly, John Herbert Va.
Cleeland, Ivavid Va.
Clement, Robert Neil N.Y.
Clements, Robert W Md.
Clemenson, Allan Edward Va.
A.B. 1950, University of Minnesota Va.
Clemons, Ormond Leslie
Cleveland, Audrey Hope
Cleveland, Harold vanBuren Va.
A.B. 1938, LL.B. 1942, Harvard N.J.
University Md.
Cleveland, Jack Alva
Cleveland, Richard Lee Calif.
A.B. 1952, University of Washington Wash.
Cliffe, Barbara Ann
Clifton, Elizabeth Hope Fla.
Clifton, Ernest Ridley D.C.
Clifton, Jonas D.C.
N.Y.

Clinch, William Bogert Va.
A.B. 1950, Yale University
Cline, Barbara Holden Mass.
Cline, Barbara Joan Va.
Clingerpeel, Calvert Hoff Va.
Clipp, Lucas Leighton D.C.
Clive, Donald Md.
Clokey, Mitchell Chase Md.
Clopton, Willard Caradine, Jr. D.C.
Close, David Olaf D.C.
A.B. 1952, The George Washington University
Clough, Bruce C. Va.
Clowser, Raymond Lester W.Va.
A.B. 1951, Shepherd State College
Clubb, Louise George D.C.
A.B. 1952, The George Washington University
Clyows, William Owen D.C.
Coachman, Eva Bailey D.C.
A.B. 1945, Miner Teachers College
A.M. 1950, New York University
Cobb, Charles David N.C.
A.B. 1950, A.M. 1946, East Carolina College
Cobb, James Outterson Va.
B.S. 1933, U.S. Naval Academy
Cobb, Lois Jane Pa.
Cochran, Bernard Wilson Md.
B.S. 1934, Marietta College
Cochran, John Lamar, Jr. Va.
B.S. 1942, Georgia Institute of Technology
Cochran, Margaret Baker Md.
Cochran, Sarah Ann Va.
Cochrane, Claire P. D.C.
Cochrane, Edward Francis Mass.
Cochrane, Walter Earl Pa.
B.S. 1944, M.S. 1945, University of Pennsylvania
Cockerill, Margaret Cochnauer Va.
Cocker, Katherine Joan Va.
Cockerill, James Edward Ohio
B.P.Eng. M.S. 1953, Ohio State University
Cockran, Mary Ann Ohio
Codel, Nancy D.C.
Codin, Lyric Calif.
A.B. 1954, Stanford University
Coe, Leonard Dayton N.Y.
A.B. 1954, The George Washington University
Coffey, Williston Bernard D.C.
Coffey, Robert Arthur Md.
Coffey, Robert M. Heath Va.
Coffin, Edward Warren Va.
B.S. 1950, University of Maryland
Coffin, James Clyde Minn.
A.B. 1954, The George Washington University
Coffman, Robert Lynwood Va.
A.B. 1952, University of Richmond
Cogan, Joy Lee D.C.
Cogan, Sherwin D.C.
Coggeshall, Myrtle Lilith Ill.
Cogill, Harry Lewis, Jr. Va.
Cogswell, Guy Usher, Jr. Md.
Cogswell, William Newzley, Jr. Va.
Cohan, Alan Barry D.C.
Cohen, Arthur Steven Md.
Cohen, Chasya Gumbezyk D.C.

Cohen, Edward — Md.
B.S. 1951, College of the City of New York
Cohen, Esther Ruth — D.C.
Cohen, Howard Mark — N.J.
Cohen, Howard Melvin — D.C.
Cohen, Iris — Md.
Cohen, Martin Irwin — D.C.
Cohen, Melvin — D.C.
B.S. 1948, Virginia Polytechnic Institute
Cohen, Natalie Laura — N.J.
Cohen, Norman — D.C.
Cohen, Norman Sonny — D.C.
Cohen, Richard Edward — Va.
Cohen, Rita Marian — D.C.
Cohen, Robert — Md
Cohen, Roger Stabel — D.C.
A.B. 1919, Princeton University
M.D. 1924, The George Washington University
Cohen, Stanley — Md.
Cohen, William — Md.
A.B. 1944, Brooklyn College
A.M. 1947, The George Washington University
Cohen, William Blanchard — Md.
B.S. 1955, Ohio State University
Cohn, Norman Melvin — N.Y.
Cole, Beverly Jane — Va
Cole, James Emery — D.C.
Colaw, Daniel Albert, Jr. — Va.
A.B. 1950, Shepherd State College
Colborn, Paul Appleby — Md.
A.B. 1952, The George Washington University
Colbry, Vera L. — Md.
B.S. 1951, Oregon State College
Cole, Charles Ackerson — Calif.
B.S. 1943, Ohio State University
Cole, Charles Alexander — Ga.
Cole, Clarence George Wade — Va.
Cole, Donald William — Va.
A.B. 1950, University of Illinois
Cole, Dorothy Volker — Va.
Cole, Emma Joan — Va.
A.B. 1952, Brooklyn College
Cole, John Pope, Jr. — Md.
B.S. 1944, Alabama Polytechnic Institute
Cole, Kenneth Joseph — Md
Cole, Lynelle Ardyce — D.C.
Cole, Pennella Ann — Va
Cole, Virginia Lucille — Ill.
Coleman, Alvin Erdman — Md.
A.B. 1930, Washington College
Coleman, Beverly Mosby — Va.
B.S. 1923, U.S. Naval Academy
LL.B. 1928, The George Washington University
Coleman, Constance Daisy — Md
Coleman, Henry Herbert, Jr. — D.C.
Coleman, JoAnne — Va.
Coleman, Thomas Winslow — Va.
Coleman, Ulwin — D.C.
Coles, Ruth Elaine — D.C.
B.S. 1954, Miner Teachers College
Collamer, Robert Thomas — D.C.
A.B. 1948, Pennsylvania State University
Coll, Robert Wilson — D.C.
A.B. 1952, The George Washington University
Colley, Billie J. — N.Y.
Collier, Carol Anne — Pa.
Collier, Janet Marie — D.C.
Colling, Lee Jay — Va.
B.S. 1952, Michigan State University
Collings, Mary Louise — Va.
A.B. 1925, Wesleyan College
A.M. 1926, Northwestern University — Md.
Collins, Charles Richard
A.B. 1956, Southwestern State College — Va.
Collins, Elmer Francis — D.C.
B.S. 1950, Georgetown University — Colo.
Collins, George Caesar
Collins, James Lloyd, Jr. — N.C.
B.S. 1954, University of Oklahoma
Collins, John Duren — N.J.
A.B. 1943, Wake Forest College — Va.
Collins, John James, Jr.
Collins, John Joseph — Mich.
A.B. 1949, University of Missouri
A.M. 1950, University of Georgia
Collins, John LeRoy — Fla.
A.B. 1950, Michigan State College
Collins, Kelly — Va.
A.B. 1942, Stetson University
Collins, Lawrence Robert — N.Y.
A.B. 1950, Albion College — Pa.
Collins, Milton Rector
Collins, Philip Starr, Jay
A.B. 1950, Williams College — Fla.
M.F.A. 1954, Princeton University — D.C.
Collins, Pauline Leonard — Tex.
Collins, Thomas Earl — Tex.
Collins, William Earl — Va.
Collier, Dorothy Carol
Collins, Eugene Bertrand
Collver, Robert Norman — Ill.
B.M.E. 1952, Purdue University — Ill.
Colten, Theodore Paul
Coltham, Paul Mathew — Va.
Colombo, Louis Robert
A.B. 1950, Muhlenberg College — Va.
Colson, Charles Wendell
A.B. 1951, Brown University — Mass.
Coltrer, Stanley, Jr. — Tex.
A.B. 1952, Syracuse University — Tex.
Coltran, Melvin — Va.
B.S. 1950, Miami University — Fla.
Coltram, Jack Wilbur — Va.
Colvin, George Robert, Jr. — Va.
Colvin, Irene Temple
Comer, Lillian Lucille — Va.
Comery, Edward George — D.C.
B.S. 1951, Manhattan College — Md.
Compton, Dudley Delone — D.C.
Conant, Harriet Hawley
Concelia, Katherine Broderick
Condee, Joan Marshall — N.Y.
A.B. 1954, The George Washington University — D.C.
Condellis, Demetrios — Wash.
Condit, Mary Dean — Va.
Condon, Robert Potter — D.C.
A.B. 1954, University of Washington
Congleton, Constance Elinor
Conley, Inez Marie — Okla.
B.S. 1916, M.S. 1919, Oklahoma Agricultural and Mechanical College — Va.
Conley, Lucie Hicks — D.C.
Conley, Mary Katherine
Conlon, Arthur James
Conlon, John Joseph

Connaughton, John Hamilton, Jr. Va.
Cotteely, Anne Noel
Connell, Joseph Edward D.C.
A.B. 1954, Antioch College N.Y.
Connell, Mary Jane
A.B. 1951, Grinnell College Va.
Connelly, Anna Louise
B.S. 1937, Pennsylvania State Teachers D.C.
College, California
Connelly, Edward Ray
A.B. 1955, The George Washington D.C.
University
Conner, Francis Crum
Conner, Mark Hale
A.B. 1949, American University D.C.
M.S. 1951, Ph.D. 1953, University Md.
of Maryland
Conniff, Clare Ann
A.B. 1950, College of our Lady Mass.
of the Elms
Connolly, Charles Thomas
Connolly, Giles Philip D.C.
Connolly, John Stoddard, Jr. R.I.
A.B. 1954, The George Washington Va.
University
Connolly, Joseph Patrick
A.B. 1954, College of the City of Va.
New York
Connor, Paul Phillips
B.S. 1955, Case Institute of Pa.
Technology
Connor, Rosemary
B.S. 1939, San Diego State College Va.
Connors, David Marty
Conover, Katherine Ott Md.
LL.B. 1939, LL.M. 1940, National Va.
University
Conover, Milton
Ph.B. 1913, Dickinson College N.J.
A.M. 1916, University of Minnesota
A.M. 1934, Harvard University
LL.B. 1955, Vanderbilt University
Conrad, Voris Ray
Conroy, Edward Alfred, Jr. Va.
Conrow, Elizabeth Leah D.C.
Considine, Catherine Lee Va.
A.B. 1954, Michigan State College D.C.
Considine, Jane
A.B. 1954, Michigan State College D.C.
Constantaky, Serban
B.S. 1954, Fordham University D.C.
Contis, George Peter
A.B. 1954, University of Pittsburgh Pa.
Contos, Emma Jane
Conway, Claire McCann D.C.
B.S. 1941, Pennsylvania State Teachers D.C.
College, East Stroudsburg
Conway, Neal John
B.S. 1951, Georgetown University Pa.
Conway, Noel Grant
B.S. in M.E. 1954, Oregon State College Calif.
Conway, Paul Thomas
A.B. 1943, Boston College Va.
A.M. 1951, Fordham University
Cook, Arthur Keith
Cook, Charles Douglas D.C.
A.B. 1955, University of Buffalo Va.
Cook, Charles Edwin
Cook, Francis Kemmet Kans.
A.B. 1942, New York University D.C.
A.M. 1950, Duke University
Cook, Helen Acker D.C.

Cook, Hortance Va.
B.S. 1947, St. Paul's Polytechnic Institute
Cook, Howard Lee, Jr. Md.
A.B. 1955, University of Maryland
Cook, Jeanne Helen D.C.
Cook, John Norris W.Va.
Cook, Leita Anne D.C.
Cook, Maryjane Katherine Va.
B.S. 1949, College of William and Mary
M.S. 1952, The George Washington University
Cook, Richard Kelsay N.Y.
Cook, William Everett W.Va.
Cook, William Henry Va.
A.B. 1942, Hobart College
Cook, William Holmes D.C.
LL.B. 1947, Washington University
Cooke, Frederick Adolphus Eaute Md.
B.S. 1949, Massachusetts Institute of Technology
Cooke, Isabelle Elizabeth Va.
B.S. 1953, Washington College
Cooke, Jane Lee Va.
A.B. 1951, University of Arkansas
Cooley, Edwin Reznick Kans.
A.B. 1934, Municipal University of Wichita
Cooley, Lawrence Alden Va.
Cooley, Thelma Alice Pa.
B.S. 1948, Temple University
M.S. 1950, Howard University
Coolick, Allan Branson Va.
Coon, Elvin Ralph Mass.
B.S. in C.E. 1946, University of Michigan
J.D. 1955, The George Washington University
Cooner, Walter Jordan Ala.
B.S. 1951, Alabama Polytechnic Institute
Cooney, Jack Bernard N.M.
A.B. 1941, University of Texas
Cooper, Arthur Gerald N.Y.
Cooper, Burnett Z. Md.
B.S. 1940, New Jersey State Teachers College, Glassboro
Ed.M. 1944, Temple University
Cooper, Emmett Monroe Va.
Cooper, Laverne Stephen N.Y.
B.E.E. 1950, Cornell University
Cooper, George Havers Va.
B.M.E. 1951, The George Washington University
Cooper, Grover Collins Md.
A.B. 1952, Ohio Wesleyan University
Cooper, Henry Charles D.C.
A.B. 1956, University of Maryland
Cooper, Joseph Emerson Va.
A.B. 1953, Indiana University
Cooper, Thomas Schuyler D.C.
Copenhaver, Edward Gerald D.C.
Copeland, Lawrence Taylor Va.
Copeland, William Alvin Va.
Copenhaver, Dorcas Harvey D.C.
Copey, John Mich.
A.B. 1954, Wayne University
Coppedge, Andrew John, Jr. D.C.
Coppola, Peter Benjamin N.Y.
Copsey, Jesse Edwin Md.
Corbett, James John Va.
A.B. 1952, Otterbein College

Corbin, Aleen Agnes — D.C.
Corbin, Clint Stever, Jr. — Md.
Corbin, Miles Cranton — Md.
Cordell, Ronald William — Va.
Corder, Lucille Dillon — Nebr.
Cordon, Allen — Oreg.
Corey, Alexander — N.Y.
A.B. 1928, Harvard College
Corey, Ivan Ronald — Calif.
Corey, William Robert — Va.
A.B. 1948, Syracuse University
Corish, William Sinclair — Va.
Corkery, Christopher Clare — Md.
B.S. 1954, Georgetown University
Corlett, Frederick Walton — Va.
Cornbrooks, James Ernest — D.C.
B.S. 1950, Florida State University
Cornelius, Kenneth Thompson — D.C.
Cornfield, Ruth Bettler — Va.
A.B. 1934, University of California at Los Angeles
Cornwell, Anna Maud — Va.
Cornwell, George Frey — N.C.
A.B. 1935, Guilford College
Corr, Hugh Arthur — Mass.
B.S. 1944, University of Massachusetts
Corredor, Gustavo Adolfo — Venezuela
Corrigan, Ralph Francis — D.C.
B.S. in Ed. 1953, Wilson Teacher's College
Correl, Frank Dieter — D.C.
B.S. 1950, Rider College
A.M. 1951, Columbia University
Corrigan, Gordon Frederick — Va.
A.B. 1942, University of Toronto
Corrigan, Joseph Thomas — Pa.
Corrow, William Walter — N.Y.
Corry, Margaret Sarah — N.Y.
A.B. 1937, Brooklyn College
Corson, Elizabeth Louise — N.J.
Corp, Donald Martin — Ill.
Corpe, John Spotswood — D.C.
B.S. 1952, Howard University
Corsaw, Gerald Leo — Md.
Corsaw, Thomas Edward — Md.
Corsaro, Benjamin Peter — N.Y.
Corso, Ronaldo — Brazil
B.S. Industria 1951, Catholic University, Rome
Costakis, Ann — D.C.
Costello, Beverley Alexander — Maine
Costello, John Henry, Jr. — Va.
A.B. 1950, University of Cincinnati
Costello, John Henry — Md.
Costello, Peyton Lemuel — Va.
A.B. 1932, Mercer College
Costello, William Frederick — Va.
Costello, Theodore Leonard — Va.
A.B. 1928, A.M. 1947, University of Utah
Cotte, John Henry — Va.
Cotter, George Roland — Va.
Cotter, Maurice Joseph — N.Y.
A.B. 1954, Fordham University
Cotter, Thomas Raymond — Va.
A.B. 1950, St. Bonaventure University
Cotting, Carleton Latham — Va.
Cotton, Dorcas Lillian — Va.
A.B. 1933, University of Maryland
Cotton, Wattie — Ala.

Cottrell, Alfred Charles
B.S. 1951, University of Maryland
Coudenaire, Donald Louis
B.M.E. 1952, University of California
Coudillard, Robert Francis
B.S. 1952, Massachusetts Institute of Technology
Coulbourn, Charles Loveland
A.B. 1952, Virginia Military Institute
Coulter, George Prather
A.B. 1951, University of California at Los Angeles
Coulter, Kenneth Brewster
A.B. 1950, Princeton University
Coulter, Patricia Florence
A.B. 1945, University of Michigan
A.M. 1953, The George Washington University
Countryman, Louis Kenneth
A.B. 1954, University of California
Coupard, Patricia Eaton
Courter, William Paul
Courtenay, James Peter
Courtin, Phillippe
Courty, Alphonse Paul
Courty, Sam Joseph
Cousins, Jean Lee
Cousins, Nannie Sandra
A.B. 1938, Wheaton College
Cousins, Ralph Wynne
B.S. 1937, U.S. Naval Academy
Cousins, Ruth Howard
Covell, Maurice Clyde
Covell, Mervyn Jack
Cowan, Paul Fletcher
B.S. in Phar. 1955, The George Washington University
Cowden, Carolyn Adam
Cox, Donald William
B.S. 1951, Mount Union College
Cox, Edith Viola
Cox, James Anthony
Cox, James Robert
Cox, Joseph Matthew
A.B. 1948, The George Washington University
Cox, Robert Marion
B.S. 1952, Oregon State College
M.B.A. 1953, University of California
Cox, Sheldon James
Coxon, Edward Donald
Coyle, Donal Kennedy
A.B. 1947, Swarthmore College
Coyle, James Wilburn
A.B. 1947, Plymouth University
Coyle, Rowan Joseph
B.S. 1951, Fairfax College
Coyne, James Dominick
B.S. in Phar. 1955, St. John's University
Crabb, Gordon William
Crabb, Richard Bruce
Crabbs, Samuel Woodrow
A.B. 1933, University of Denver
Crabtree, Robert Grace
Crackower, Louis Wyman
A.B. 1954, University of Denver
Cradlin, William Talbott
Crady, Clarence William
B.S. in P.E. 1949, University of Pittsburgh
Craft, Charles Gardner

Craft, Robert Harold — Md.
B.S. 1951, The George Washington University

Crafton, Paul Arthur — D.C.
B.M.E. 1944, College of the City of New York
M.S. 1951, University of Maryland

Cranton, Sister Marie
B.L.Y. 1951, Temple University — D.C.

Crapo, Doris Jean — Minn.
A.B. 1947, Gustavus Adolphus College

Craig, Asher Goldstein, Jr. — Va.
B.S. in M.E. 1947, University of Kentucky

Craig, Joan Louise

Craig, Mabry, Jr. — Md.
B.S. 1924, U.S. Naval Academy — D.C.

Craigie, James Nea

Crain, James Wendell — N.Y.
B.S. 1941, Northwestern University — D.C.
M.B.A. 1947, Harvard University

Cramer, Morris Michael
A.B. 1935, Pennsylvania State University — Pa.

Crandall, Robert Morris

Crandell, John McCleve — Md.
A.B. in Ed. 1951, Arizona State College, Tempe — Ariz.

Crane, Jane Rose Fritz
A.B. 1954, Brown University — Md.

Crane, Madalene Bishop
A.B. 1944, Vassar College — Md.

Crane, Michael Lange

Cranfield, Harold George — Va.
B.S. 1928, Carnegie Institute of Technology — Md.

Cranmer, Marie Alice
A.M. 1932, Cornell University

Cranshaw, James Carpenter — D.C.
B.S. 1952, University of Rhode Island — Va.

Cratsenberg, George John
B.S. 1950, University of Pittsburgh — Pa.

Crave, Mary Katherine

Craven, John, Jr. — Md.
B.S. in C.E. 1946, Cornell University — Md.
M.S. in C.E. 1947, California Institute of Technology

Ph.D. 1951, University of Iowa

Craven, William Kyler

Cravens, Alys Thayer

Craver, Patty Nell — Ga.

Crawford, Clayton Eugene — Ark.
A.B. 1941, West Virginia Institute of Technology — W.Va.
A.M. 1949, Marshall College

Crawford, George Alvin

Crawford, George Elliott — Iowa
B.S. 1925, U.S. Naval Academy

Crawford, Henry Butler — W.Va.

Crawford, Howard Irvin — D.C.

Crawford, Joyce Lanzberg — Iowa

Crawford, Newton Irwin — D.C.
B.S. 1950, Pennsylvania State University — D.C.

Crawley, Robert Ambrose, Jr.

Creager, Wilma Ellen — D.C.
B.S. in Ed. 1943, Capital University — Ohio

Creamer, John Edmund

Creath, Basil Maury — D.C.

Cree, Paul George, Jr. — D.C.
A.B. 1952, St. John's College — D.C.

Creeron, Marguerite Mary — D.C.
A.B. 1933, Dumbarton College

Creed, Ina Ann — Md.

Creighton, Lois Davenport Hl — N.H.

Crelgrove, Lillamae Brown — D.C.
B.S. 1953, The George Washington University

Crerie, James Julian — D.C.
B.E.E. 1935, The George Washington University

Crenshaw, Richard Wilder — Va.

Crescenti, George Frederick — D.C.

Crenshaw, Thomas Jefferson — Fla.

Crenshaw, Cora Robbins — D.C.
B.S. 1953, M.S. 1955, The George Washington University

Crew, Fenton Gilbert — D.C.

Crib, Vance Newton — La.

Crichlow, Ira Jackson — Va.
B.E.E. 1954, The George Washington University

Crider, Lloyd Berry — Md.

Crider, Thomas John — D.C.

Crigler, Jane Hancock — Ind.
LL.B. 1937, Northwood University

Crim, Howard Gardner — Va.

Crise, Jeannine Henry — Ind.
B.S. 1953, Indiana University

Crist, George Thomas, Jr. — N.J.
B.S. in B.A. 1951, Lehigh University

Crist, James Howard — Va.

Crist, Robert Hollis — Va.
B.S. 1951, Pennsylvania State Teachers College, Slippery Rock

A.M. 1955, The George Washington University

Cristaldo, Jose Pedro — Paraguay

Criswell, Arthur Dan — Va.

Critchfield, Verne Ray — Va.

Critchlow, William James III — Utah
A.B. 1951, The George Washington University

Croasdell, Cameron Walter — Va.

Crocs, Lewis Henry — Md.

Crock, Meele Edward — Ala.

Crockett, Minnie Ann — D.C.

Crockett, Winford Reed — D.C.

Crockett, Wyndell Ryder — Hawaii
B.S. 1931, Western Michigan College

Crockett, William Harold — Ohio

Crockett, Kenneth Stanley — Md.
A.B. 1938, Washington Missionary College
A.M. in Ed. 1954, The George Washington University

Cromartie, William Asbury — Va.
B.S. 1942, University of Georgia
LL.B. 1949, St. John's University

Crome, Norman Andrew — Md.
B.S. 1948, University of Maryland

Crosby, Constance Lee — D.C.

Crosby, Harriet Everson — Pa.

Cropley, Roma Wynnell — D.C.

Cross, Carrie Rhett — Calif.

Crossfield, Phyllis Isbell — D.C.
B.C.E. 1952, The George Washington University

Croteau, Jeanette Constance — N.H.

Crothers, Suzanne Frances — Ind.

Crouch, Hazell Williamson — N.Y.
B.M.E. 1953, The George Washington University

Crouch, May — Mo.
Crouse, John Thomas — Va.
Crowder, Edward Tamlin — Md.
A.B. 1951, University of Pittsburgh
A.M. 1954, Ph.D. 1962, New York University
Crowe, John Marvin — D.C.
Crowe, Natalie Fesnak — Va.
Crowe, William James, Jr. — Okla.
B.S. 1947, U.S. Naval Academy
Crowley, Edwin Daniel — Va.
B.S. in F.S. 1941, Georgetown University
Crowley, Jerome Francis, Jr. — D.C.
A.B. 1953, Haverford College
Crowley, Thomas Michael Joseph — N.Y.
Crowson, Judith Ellen — Va.
Crowther, James Gillis — N.J.
A.B. 1955, St. Peter's College
Cruikshank, Erica Frances — D.C.
A.B. 1951, Wellesley College
Crumb, Richard Ellis — N.Y.
Crumbaugh, Vivian Muriel — D.C.
Crumly, Howard William — D.C.
Crump, Claude Hamilton — Va.
Crump, Edmund Parke — D.C.
Crumpacker, Betty Warner — D.C.
Crumpacker, Patricia Hilbert — D.C.
Cruff, William Augustine — N.Y.
A.B. 1950, Adelphi College
Cuthert, Dorothy Riff — Va.
B.S. 1942, Drexel Institute of Technology
Culbertson, Frances Mitchell — Va.
Ph.D. 1955, University of Michigan
Culbert, Leonard Matthew — Fla.
B.S. 1941, U.S. Naval Academy
Culler, Paul Joseph — Ohio
Cullinane, James Michael — Md.
Cullinane, John Lennihan, Jr. — D.C.
Cullinan, Margaret Ann — D.C.
Culver, John Arthur — Md.
Cummings, Clinton Robert — Md.
Cummings, Frank — Md.
Cummings, Ida Daly — Va.
A.B. 1951, University of Alabama
Cummings, Lilla Burt — D.C.
A.B. 1948, The George Washington University
Cummings, William G. — D.C.
Cummins, Owen Neal — D.C.
Cunniff, Jack Dillon — D.C.
Cunniff, Paul Joseph — Mass.
A.B. 1938, Boston College
Cunningham, Barbara Ann — Va.
Cunningham, Mary Alice — Md.
Cunningham, Mary B. — Md.
Cunningham, Mary Jane Catherine — Va.
Cunningham, Richard Edward — Va.
Cunningham, Scott Mac Duffee — Mass.
Cunnyngham, Nancy Jessie — N.Y.
A.B. 1954, University of Vermont
Curley, Barbara Ann — Va.
Curley, Michael Joseph — Md.
Curran, Josephine Ann — Md.
Currie, Virginia Margaret — Va.
Currier, Beverly Petty — D.C.
A.B. 1951, The George Washington University
Curry, Alma Martha — D.C.
A.B. 1918, The George Washington University
Curry, Bryce Quentin
A.B. 1951, The George Washington University
Curry, Edgar Hayden
Curry, Mary Catherine
B.S. 1942, New York State College for Teachers
A.M. 1953, The George Washington University
Curtain, John Tracey, Jr.
Curtin, Miriam G.
Curtis, Allen Bertram
B.C.E. 1948, Penn College
Curtis, Dorothy Snell
Curtis, Jean Grey
Curtis, Kenneth Edward
Curtis, Daniel McClinton
A.B. 1955, University of Michigan
Custard, Robert Franklin
B.S. in Engr. 1950, LL.B. 1951, The George Washington University
Cutler, Clifford Noble
Cutler, Elvin James, Jr.
B.S. 1951, Idaho State College
Cutler, Jack E.
Cutler, Mitchell Stein
B.S. in B.A. 1955, Georgetown University
Cutlip, Charles Vincent
A.B. 1955, The George Washington University
Cykowski, Stanley
A.B. 1945, University of Massachusetts
Cymea, Alexandre
Czapiewski, Robert Crispin
B.S. 1951, Pennsylvania State University
Czok, Mary

D

Dabell, Virgilia Nancy
Dabell, Ronald Edward
Dacus, Roscoe
Dacey, John Elmer
B.S. 1938, U.S. Naval Academy
M.S. 1948, Massachusetts Institute of Technology
Dach, Rachel MacIntyre
A.B. 1955, The George Washington University
Da Costa, Adelind Nogueira
E.E. 1945, Instituteo Superior Technico, Portugal
Dade, Eleanor Marie
A.B. 1955, Howard University
Daffron, Thomas Aloysius
B.S. 1947, Cornell University
Dagher, Joseph Hanna
B.S. 1955, University of London
Dagilatis, John Stanley
B.S. 1950, Loyola College
A.B. 1953, University of Dublin
B. des lettres 1954, Universite of Paris
Dahbour, Hussein A.
A.B. 1952, State University of Iowa
Dahl, Francis Langley
Th.B. 1940, Walla Walla College
Dahl, Frederick Roy
A.B. 1950, University of Minnesota
A.M. 1951, Fletcher School of Law and Diplomacy

Dahlstedt, Mary Joan — D.C.
Dailey, Henry Edward — Va.
A.B. 1951, Duke University
Daisy, Charles Deros, Jr.
Dalton, Lowell Raymond — Mo.
B.S. 1955, Utah State Agricultural College — Utah
Dames, Paul Hatch
B.S. 1954, Utah State Agricultural College — Utah
Dalaba, Arlene Marie
Dale, Phillip Gale — N.J.
Dales, Sylvia R — D.C.
A.B. 1944, Queens College — Va.
M.S. 1945, Syracuse University
Dalatore, Roland R
Dailey, Lawrence Cutting — Va.
A.B. 1948, Yale University — D.C.
Dalman, Herbert Theodore
B.S. 1949, College of the City of New York — Md.
M.S. 1942, Iowa State College
Dalene, John Wesson
Dalton, Carol Frances — Md.
Dalton, Martin Kenneth — Fla.
A.B. 1948, St. Mary's Seminary and University — Va.
Dalton, Mildred Louise
Dalton, Olive — Va.
Dalty, Micheline Willems — D.C.
Daly, James Harvey — D.C.
A.B. 1928, Notre Dame College — Md.
Daly, Jean Ann
A.B. 1949, Duke University — Fla.
Daly, John Joseph
Daly, John Malcolm — Md.
D'Ambrosio, Gino — D.C.
D'Antonio, Joseph Ettore — D.C.
Daneyer, Richard Walton — D.C.
A.B. 1947, University of Washington — Wash.
A.M. 1948, Fletcher School of Law and Diplomacy
M.B.A. 1950, Harvard University
D'Ancio, Louis Joseph
D'Angelo, Georgia Ruth — Ohio
Dana, William Chrisitan — D.C.
Dana, William Hibbard — D.C.
B.Ch.E. 1951, LL.B. 1953, Cornell University — N.Y.
Danen, George
D'Andrea, Eugene Peter — Pa.
Danford, Henry Warren — N.Y.
A.B. 1950, Yankton College — Ill.
Dang, Maybelle Marr
A.B. 1945, University of California — D.C.
D'Angelo, Mary F.
Danick, Warren — N.Y.
Daniel, Annette J. — D.C.
B.S. 1939, New Jersey State Teachers College — Va.
A.M. 1944, New York University
Daniel, Clarence David
B.S. 1953, Massachusetts Institute of Technology — Mich.
Daniel, Douglas Ray
Daniel, Sidney Theodore — Tenn.
A.B. 1942, New York University — Va.
LL.B. 1953, The George Washington University
Daniels, Alan Murray
Daniels, Carolyn Janet — Nebr.
D.C.

Daniels, Edward Kent, Jr. — Va.
B.S. in M.E. 1955, West Virginia University
Daniels, Thomas Emanuel — W.Va.
Daniels, Wyatte Hughes — Nev.
Danielson, Lorene Alfred — D.C.
Danko, John George, Jr. — D.C.
A.B. 1952, Norwich University
Dantzawer, George — Pa.
B.S. 1954, Pennsylvania State Teachers College, Lock Haven
Dannemiller, Mary Carrol — D.C.
Danner, Jack Neal — Pa.
D'Antonio, Daniel — N.Y.
B.S. 1948, University of Buffalo
Danz, Norbert Earl — D.C.
Danz, Marie Grace — D.C.
A.B. 1938, Dumbarton College of the Holy Cross
Darby, Jean Isabelle — Md.
Darcey, Edward Henry — Va.
Darden, Warren Horace — Va.
B.B.A. 1948, LL.B. 1948, University of Georgia
Dargin, Evera — D.C.
Darke, Mary Belle — D.C.
Darling, Joseph Warren — Pa.
B.S. 1928, Harvard University
M.B.A. 1934, University of Pennsylvania
LL.B. 1954, The George Washington University
Darnell, Donald James — W.Va.
Darnell, Louise Marie — D.C.
Darnes, Harry Thomas — Va.
Dart, Susan Aubrey — N.Y.
A.B. 1954, University of Vermont
Daskam, Harry Mortimer — Va.
Daugherty, John Thomas — Minn.
A.B. 1941, LL.B. 1943, The George Washington University
Baum, Jesse Jack — D.C.
B.S. 1953, Franklin and Marshall College
Daussman, Grover Frederick — Va.
Davenport, Mary Awe — Pa.
Davenport, Peggy Rae — Va.
Davenport, Rosalyn Gay — Va.
Davenport, Vera Tyrness — D.C.
B.S. 1936, Miner Teachers College
David, John Marshall — La.
David, Robert Spencer — D.C.
B.S. 1938, University of California
A.M. 1949, The George Washington University
Davidian, Massis — Va.
A.B. 1944, B.S. 1948, A.M. 1948, University of Michigan
Davids, Elizabeth Barlow — Va.
B.S. 1941, Cornell University
Davids, Steven Spencer — Va.
B.S. 1955, American University
Davies, Edith Maurice — D.C.
B.S. 1951, The George Washington University
Davies, Herbert Edward — Wash.
B.S. 1949, U.S. Naval Academy
M.S. 1955, U.S. Naval Post Graduate School
Davies, John Merrick
Davies, Paul — D.C.
Davis, Akin Thornwall — Md.
B.Ch.E. 1951, University of Delaware — D.C.

Davis, Arthur Phoenix — N.C.
Davis, Charles Marvel — D.C.
Davis, Charles Norris — Va.
B.S. 1951, University of Georgia
Davis, Charlotte Marlene — Pa.
Davis, Chester Tempest — D.C.
Davis, Dorothy McKenzie — D.C.
A.B. 1955, University of Maryland
Davis, Dorothy Helen — Va.
Davis, Elmer Frederick — Md.
Davis, Elmer Virginia — D.C.
Davis, Ethan Daniel — Va.
Davis, Florence Whitlock — Conn.
B.S. 1947, University of Connecticut
Davis, Gerald William — Va.
Davis, Harwood Willard — D.C.
Davis, Hazel Amanda — D.C.
A.B. 1923, University of Washington
Davis, Howard Rodet — Ill.
Davis, Jacqueline Ambler — Md.
Davis, Jeanne Marie — Md.
A.B. 1951, The George Washington University
Davis, Julia Griffith — D.C.
Davis, Kash Ernest — Md.
A.B. 1933, Hampden-Sydney College
Davis, Lester Edmund — Va.
Davis, Lemmer Nathaniel — Va.
A.B. 1942, Marietta College
Davis, Lowell Levon — D.C.
B.S. 1942, Howard College
Davis, Mary Ann — D.C.
Davis, Morgan Richard — Pa.
Davis, Nancy Anne — Va.
Davis, Olive — D.C.
Davis, Paul Dallas — Va.
B.S. 1951, Southeast Missouri State College
Davis, Paul Vincent II — Maine
Davis, Richard Akin — Va.
Davis, Robert Weedon — Va.
A.B. 1952, Roanoke College
Davis, Rosa Hubbard — Va.
B.S. 1942, Radford College
Davis, Ross Alfred III — Pa.
Davis, Sarah Jane — Wash.
Davis, Spurr John — Va.
B.S. 1941, Pennsylvania State Teachers College, Indiana
A.M. 1955, The George Washington University
Davis, Thomas — D.C.
A.B. 1934, University of Iowa
Davis, Warren Lewis — Va.
Davis, Watson Alton — Canada
Davis, William Kennedy — Md.
Davis, William Henry — Va.
A.B. 1951, Bowdoin College
Davis, William Spalding — D.C.
Davison, Carol Brian — D.C.
Davison, Margaret Angeline — D.C.
A.B. 1948, College of William and Mary
Davydenko, Irene — D.C.
Dawson, John C., Jr. — Pa.
Dawson, Thelma Idella — D.C.
Dawson, Thomas Arlene — D.C.
A.B. 1944, Ohio State University
Day, Arthur White, Jr. — Va.
B.S. 1948, Wilson Teachers College
Day, Carl Eugene — Va.
Day, Calvin Woodward — Conn.

Day, Charles Herbert — Va.
B.S. 1953, University of Maryland
Day, Elizabeth Anne — ..
Day, Ruth Silverwale — D.C.
B.S. in Ed. 1929, Northwestern University — Va.
de Aguiar, Joseph M. — Va.
Deakin, Valerie
Dean, Martha Lucille — Va.
B.S. 1952, Alabama Polytechnic Institute
A.M. 1953, University of Minnesota
Dean, Orien Graydon — Md.
B.S. 1956, University of Maryland
Dean, Rosa Versella — D.C.
B.S. in L.S. 1946, Virginia State College — Conn.
M.S. in L.S. 1953, University of Illinois — ..
Dean, Ray Thomas
De Angelis, Julia Marie — Va.
DeAngelis, Louis Benjamin — Va.
B.S. 1951, The George Washington University
Dearden, Ronald Arthur
Dearfield, Aber Harry — D.C.
B.S. in E.E. 1949, Carnegie Institute of Technology — Va.
Deaton, Norman Neal — Kans.
Debevoise, Neilson Thomas
DeBlois, Eleanor Nash — Ba..
A.B. 1946, The George Washington University — ..
DeBoeck, Jean Baptiste Louis
Debons, Albert Frank — Pa.
B.S. 1953, Syracuse University — Va.
M.S. 1955, The George Washington University — D.C.
DeBose, Joseph Mathews — Va.
DeButts, Margaret Buckman
de Carvalho Maria Theresa
Deck, William Meade II — D.C.
A.B. 1952, The George Washington University
Deckard, Reginald Kell — M..
A.B. 1947, Franklin and Marshall College — Md.
Deckelman, Francis Clark — W. Va.
Deckelman, William Godding, Jr — N.C.
Decker, Charles Seymour, Jr — ..
Decker, George Elwood — ..
Dediego, Marie, Jr — ..
de Echegaray, Miguel — Md.
A.B. 1952, The George Washington University — Md.
De Dominicis, Barbara Jean — D.C.
Deeds, Donald Aloysius — Mass.
Deeds, Margaret Angela — Md.
Deehan, Paul Kenneth
Deemer, Margaret Mary — ..
B.S. 1933, Pennsylvania State Teachers College, Kutztown — D.C.
A.M. 1940, The George Washington University
Dees, Lola Tidwell — R.I.
A.B. 1950, The George Washington University
Dees, Louis Linwood — Va.
A.B. 1943, Pomona College
LL.B. 1950, Harvard University
Deeters, Mary Matthews
B.S. 1938, Alabama Teachers College, Florence

De Fabritis, Sylvia D.C.
Defibaugh, Donald Leland Md
B.S. 1954, Pennsylvania State Teachers College, Shippensburg
Defebere, Bruce Karl, Jr. Calif.
B.S. 1953, University of Maryland
Defebere, Carolyn Marge D.C.
deFord, Elizabeth Scott N.C.
Defrancesco, Rosa D.C.
De Freitas, **Charles Mumford** Md.
De Freitas, S. Thomas Md.
A.B. 1928, **Catholic University of America**
Degen, Bernard John N.J.
De Giorgi, Salvatore Paul D.C.
B.S. 1952, Seton Hall University
Degler, Stanley E. Va.
A.B. 1951, **Pennsylvania State University**
Degnet, Donald Duane
De Guzman, **Restituto G.** D.C.
LL.B. 1952, Manuel L. Quezon Educational Institution Philippines
De Haven, Donald Elwood
Dehnick, Kathryn Md
A.B. 1945, Rutgers University Fla.
Deimard, Ethan Curtis
A.B. 1952, Swarthmore College Minn.
LL.B. 1954, Harvard University
Deitch, Ronald Stuart D.C.
A.B. 1954, **Washington and Lee University**
Dietelbaum, Ronald Herbert
Dietrich, Paul David Md
Deitrick, Thomas Carter N.Y.
De Kruyer, Henry Leo Va.
A.B. 1936, A.M. 1942, New Jersey State Teachers College, Montclair D.C.
Delahanty, Joseph Francis
De Laine, Lola Beatrice Va.
A.B. 1949, Shaw University D.C.
Delaney, Thomas Gerard
B.S. in F.S. 1954, Georgetown University Mont.
De Lano, Willard Alfred
B.S. 1946, Wilson Teachers College D.C.
Ed.M. 1951, **University of Buffalo**
de la Puente, Joseph Loomis
A.B. 1954, **University of New Mexico** D.C.
de Laski, Donald
A.B. 1954, Duke University Va.
De La Vergne, William Harold, Jr.
De Lean, Odette Agnes D.C.
De Legarreta, Francisco D.C.
B.S. 1955, Georgetown University N.Y.
Delfino, Gertrude Jane D.C.
Delgado, Concepcion Montenegro Philippines
Delgado, Maria Graciela D.C.
Del Gatto, Martha Farrar Tenn.
B.S. 1942, University of Tennessee
De Lio, Anthony Peter Va.
B.S. 1953, Brooklyn Polytechnic Institute
Dell, Albert Hampson
Dellitt, John Philip Md.
B.S. 1950, Iowa State College D.C.
Delmar, Margaret Jane
de Lorenzi, Robert Martin D.C.
De Lorenzo, Natalie Sally Va.
Delvart, Maria Pyskach Md.
A.B. 1951, University of Pittsburgh Pa.
Del Signore, Gilda W.Va.

De Luz, Lozelle Jenkins D.C.
B.S. 1952, North Carolina State Teachers College, Winston-Salem
del Valle, Katherine Ewen D.C.
De Maeth, Barbara Anne D.C.
De Marcum, Mrs. [illegible] Furio D.C.
Demeo, Louise Peter D.C.
De Melman, Ada Wilson D.C.
A.B. 1951, Wheaton College
Dement, Richard Anthony D.C.
De Meza, Dreama Lagaya Philippines
B.S. in B.A. 1948, University of the Philippines
Demetrouleas, Nicholas Menelaos Va.
B.S. in M.E. 1948, South Dakota State College
Deming, Harry Leeroy Md.
B.S. 1946, A.M. 1946, The George Washington University
Deming, Phelps Cook D.C.
De Mino, Leonard Joseph D.C.
Demiss, Nemophem D.C.
Demmlburg, Lena D.C.
A.B. 1935, The George Washington University
Dempsey, Sara Belle Ky.
Dendeler, Mary Margaret Kans.
Denega, Glenn E.S. Md.
A.B. 1947, M.Ed. 1952, University of California at Los Angeles
Denham, Percy LeRoy D.C.
Denham, Bobby Samuel D.C.
Denn, Henry Stuber S.C.
A.B. 1951, Presbyterian College
Denn, James Arrington, Jr. D.C.
Denn, Marguerite Louise D.C.
Denn, Richard Henderson D.C.
A.B. 1950, University of Pennsylvania
Denver, Kathleen Mary D.C.
[illegible] Rose Marie Mass.
De Paul, Albert Lincoln Md.
DePietro, Albert Lincoln D.C.
DePietro, Cecil Maitland Pa.
A.B. 1955, The George Washington University
De Porte, Paul Vital Md.
A.B. 1942, Rutgers University
De Quattro, Vincent Louis Calif.
B.S. 1951, University of California
De Remi, Lucas Joseph Va.
B.B.A. 1951, LL.B. 1954, Tulane University
Derbaix, James Joseph Pa.
Derbyshire, John Cecil D.C.
Derrenbacher, Helen Catherine Md.
A.B. 1951, Wittenberg College
A.M. 1953, Columbia University
Desmond, Stella M. Kelley D.C.
B.S. 1942, Mount Ida Junior College
A.M. 1950, Columbia University
Des Soleimani, [illegible] Iran
A.B. 1953, Howard University
De Rosa, Lawrence Joseph Mass.
Desmarais, Charles Le Roy D.C.
A.B. 1952, Pennsylvania State University
De Sommet, Hyacinthe D.C.
A.B. 1948, Yale University
LL.B. 1948, Harvard University
LL.M. 1949, Michigan University
De Soussure, Madeleine D.C.
A.B. 1948, University of California at Los Angeles

de Seife, Gloria Vasta — N.J.
Desiderio, Frank Roger — D.C.
de Silva, Sara Thompson — D.C.
A.B. 1924, Wellesley College
A.M. 1927, Radcliffe College
de Silva, Susan Carmela — Md.
De Simone, Rose Mary — D.C.
Despain, Robert Verne — Utah
D'Espinosa Jane — D.C.
A.B. 1954, Bates College
Detuncq, Marlow William — Md.
A.B. 1951, University of Michigan
De Turk, Phil Hoss — Va.
A.B. 1954, The George Washington University
Detwiler, Charles Robert — Va.
Detwiler, Harry Grubb — Pa.
B.S. 1950, Pennsylvania State Teachers College, West Chester
A.M. 1952, The George Washington University
Deuber, Fred Joe — Ohio
B.S. 1951, Ohio State University
Deuterman, Irene — Va.
Deutermann, Alan Roy — D.C.
Deutsman, Barry Howard — D.C.
Devan, Richard — D.C.
Devereux, Robert Essex — Calif.
A.B. 1944, Indiana University
Devin, Charles, Jr. — Md.
B.S. 1953, The George Washington University
Devine, Edward Peter — Md.
A.B. 1954, The George Washington University
Devine, Mary Jane — Mass.
A.B. 1948, Trinity College
Devine, William, Jr. — Md.
B.S. 1942, M.S. 1947, Massachusetts Institute of Technology
Devlin, Gerard Francis — Mass.
De Vries, Antonia Regina — Holland
De Vries, Regina Johanna — D.C.
Dewees, William Henry — Calif.
De Weese, Thomas Amherst — Va.
Dewberry, Jimmie Wade — Va.
De Wees, Gloria A. — Pa.
Dewing, Rosalie Nestor — Va.
De Witt, Benjamin — D.C.
B.S. 1948, University of Arizona
De Witt, Harvey Jennings — Calif.
De Witt, Kent — Calif.
A.B. 1941, Reed College
De Witt, William Bradley — Md.
A.B. 1948, Howard College
A.M. 1952, The George Washington University
Deyo, Richard Beale — D.C.
B.S. 1950, Virginia State College
Dhawan, Madan Gopal — D.C.
Diab, Salah Mohamed — D.C.
Dial, Blackwell Williams — Va.
A.B. 1940, University of Wyoming
Diamond, Jack — D.C.
A.B. 1951, The George Washington University
Diamond, Louis Howard — D.C.
A.B. 1954, The George Washington University
Diamond, Sidney — Va.
B.S. 1950, Syracuse University
M.F. 1951, Duke University

Dibbs, Alfred Francis — D.C.
Dibbs, Fred Newton — D.C.
Dick, Lohr Mitchell — D.C.
A.B. 1947, Princeton University
Dick, Mary Ann — D.C.
Dickeman, Charles Edward — Md.
Dickens, Martha Buell — D.C.
Dickerson, Mary Ann Veronica — Utah
B.S. 1954, Miner Teachers College
Dickerson, Paul Boyce — D.C.
Dickerson, Ruth — Md.
Dickey, Inez — Tenn.
Dickey, Willie Mills — Va.
B.S. 1934, U. S. Naval Academy
Dickinson, Dean Charles — Ohio
Dickinson, John Lawson — D.C.
Dickson, Charles H., Jr. — D.C.
A.B. 1954, Occidental College
A.M. 1955, Fletcher School of Law and Diplomacy
Dickson, Mary Joan — N.
B.S. 1951, Rider College
Dickson, Wallace Gordon — N.
Dickstein, Leroy — N.
Diedrichs, Susan Lillian — N.
Dieffenbach, Frances Ayels — Va.
A.B. 1930, Southern Methodist University
Diegelmann, Marion Faith — Va.
A.B. 1955, The George Washington University
Diehl, Jack Lee — N.
B.S. 1953, New York State Teachers College, Potsdam
Diehl, Roseanne Amelia — N.
Diehl, Sylvester James — N.
Diemer, Fred Joseph — Tex.
Dierking, Billie J. — D.C.
Dierking, William Ray — D.C.
Dietrich, Earl Donald — Ohio
Dietrich, Janice Sandberg — Pa.
Dietrich, Lloyd Eckert — D.C.
A.B. 1952, Pennsylvania State University
Dietrich, Rhoda Louise — Va.
A.B. 1953, Chestnut Hill College
Dietrich, William Allen — Va.
Di Franco, Antonio — Va.
Diggs, John Oliver — Va.
B.S. 1953, Maryland State Teachers College, Frostburg
Di Gioia, Peter Joseph — Va.
Di Giulian, Anna Maria — Va.
B.S. 1939, Wilson Teachers College
Di Giulian, John Peter — Va.
Di Gregorio, Josephine Marie — Va.
Dilcher, Harley Earl — Va.
B.S. 1944, U. S. Coast Guard Academy
Dildine, John Richard — Va.
Dille, Lloyd Richard — Va.
Dilley, Patricia Alison Ruby — Va.
Dillon, Francis Joseph — Va.
B.S. 1951, Siena Heights College
Dillon, John Henry — Va.
B.S. 1934, Bates College
Dillon, Philip Lawrence — Va.
Dillon, Rachael Louise — Va.
Dillon, Viola Sherwood — Va.
DiLorenzo, Jack Thomas — Va.
LL.B. 1948, University of Buffalo
A.B. 1955, The George Washington University

Di Maggio, Caesar S.
Dimock, Dorothy D.C.
Dinsmore, Claude Chester, Jr. Ill.
B.C.E. 1954, The George Washington Md.
University
Dimond, Robert Edward
Dinan, Thomas William Md.
A.B. 1935, A.M. 1938, Boston College Va.
Ed.M. 1951, Harvard University
Dineen, Richard C.
Dinger, Wilbur Ward Iowa
B.S. 1951, U. S. Naval Academy N.Y.
Dinnerstein, Jack
B.E.E. 1951, Rensselaer Polytechnic N.Y.
Institute
M.S. in E.E. 1954, Massachusetts
Institute of Technology
Dinesman, Marvin B.
Dinneen, Sylvia Ann N.Y.
Dinsmore, John Robert Va.
B.S. 1949, U. S. Naval Academy Va.
M.S. 1944, Massachusetts Institute
of Technology
Dinsmore, Paul Rich
A.B. 1954, University of Maine Maine
DiPietro, Louis Pasquale
D. Re, John Joseph Md.
B.S. 1953, McGill University D.C.
Di Re, Leonard Benjamin
B.S. 1951, McGill University D.C.
Disario, Nicholas
Disler, Oscar Charles D.C.
A.B. 1945, The George Washington Pa.
University
DiTraglia, Frank J.
M.D. 1943, St. Louis University D.C.
Dittenhafer, Elizabeth Jane
Dittman, Bobby Dale D.C.
Dix, Edgar LaRue Va.
Dix, Robert Ronald D.C.
Dixon, Ben Franklin III Md.
A.B. 1950, University of North N.C.
Carolina
Dixon, Cloyce Irven, Jr. Md.
A.B. 1954, The George Washington
University
Dixon, David George
A.B. 1953, Brigham Young University D.C.
Dixon, Harold Anthony
B.E.E. 1954, New York University N.Y.
Dixon, Helen Angra Md.
B.S. 1941, Bloomsburg State Teachers
College
Dixon, Herbert Cyril D.C.
A.B. 1934, Union College
A.M. 1949, Columbia University
Dixon, Kertrand Dale
Dixon, Nathaniel Roland D.C.
B.S. 1940, Miner Teachers College D.C.
Dixon, Robert Galloway, Jr. Md.
A.B. 1943, Ph.D. 1947, Syracuse
University
Dixon, William Denny Va.
A.B. 1943, Emory and Henry College
LL.B. 1948, University of Richmond
diZerega, Thomas William Va.
A.B. 1954, Municipal University of
Wichita
Dlugosz, Stanley John Conn.
Doane, Donald Gene D.C.
Doane, Eileen Malloney Md.
A.B. 1955, The George Washington
University
Doane, Linda Lou D.C.
Dobak, Philip Louis D.C.
Dobbs, Dorothy Sxene Md.
B.S. 1948, Duke University
M.S. 1950, Emory University
Dobromesky, Bohdan J. D.C.
A.B. 1949, New York University
Dobson, Phillip Bradley Va.
Dockterman, Dorothy Lillian D.C.
Dodd, Willard Baylor Va.
Dodd, Roberta Wheeler D.C.
B.S. 1949, Miner Teachers College
Dodd, Stephen Porter Va.
B.S. 1942, Oklahoma Agricultural and
Mechanical College
M.B.A. 1955, University of
Pennsylvania
Dodek, Aaron Willard D.C.
Dodex, Oscar Irving, Jr. D.C.
Dodge, Barbara Ann Va.
Dodge, Byron Maurice Wash.
Dodge, Patricia Carol D.C.
Dodge, Peter William Va.
Doebler, Clare Mary Pa.
Doerfer, John Page Md.
Doerrenberg, Helen Johanna Hulda Ill.
Doerr, John Adam D.C.
A.B. 1951, Principia College
Doescher, Howard Donald Okla.
B.S. Chem. Eng. 1948, Denver
University
Doerwval, Sofa Va.
Doherty, Frances Wells Fla.
Doherty, Robert Allen Md.
B.S. 1950, University of Idaho
Doherty, Robert Emmet Fla.
B.S. 1944, U.S. Naval Academy
Dolan, Robert F. N.J.
Dolarad, Alyce Burr D.C.
M.D. 1945, A.B. 1942, The George
Washington University
Dolfs, Katherine Genevieve D.C.
Doll, C.E., Jr. Va.
Dolson, Robert Edward N.Y.
Domann, John Thomas Wis.
B.S. 1951, University of Wisconsin
Dombek, Edward Charles Conn.
Domin, Mary D.C.
Dominguez, Manuel D.C.
Dominguez, John Francis Texas
A.B. 1953, Southeastern State College
Domzalski, Joseph Donald Pa.
Donaghue, Hugh Patrick Va.
A.B. 1952, Boston College
Donahoe, Constance Regina Va.
Donahue, Matthew Edward D.C.
Donahue, Robert Charles Va.
B.S. 1947, College of the Holy Cross
Ed.M. 1955, Boston University
Donahue, Zoe Jackson Md.
B.S. 1947, St. Joseph's College
Donald, Bobbie Lester Va.
Donaldson, Howard Wayne Ill.
A.B. 1942, Aurora College
Donavin, Lawrence Creighton D.C.
Donnelly, Charles Jerome D.C.
Donnelly, John Augustine Mass.
B.S. 1942, U.S. Naval Academy
Donnelly, John F. Va.
A.B. 1948, University of Notre
Dame
Donnelly, John Lappin Va.

Donnelly, Orville Wright — Md.
A.B. 1943, Swarthmore College
M.S. 1950, The George Washington University

Donnelly, Victor Francis — Va.
B.S. 1949, Seton Hall University

Donner, Ruth Elinor — Va.

Donofrio, Louis John, Jr — N.J.

Donovan, Catherine Angela — Md.
B.S. 1947, Pennsylvania State Teachers College, California

Donovan, James Lawrence — D.C.

Donovan, Michael John — D.C.

Donovan, Richard Irving — D.C.

Donovan, Rita Marie — Md.
B.S. 1942, Pennsylvania State Teachers College
A.M. 1950, The George Washington University

Donvito, Pasqual Anthony — Pa.
A.B. 1949, The George Washington University

Doolev, Wilbur Jay — Md.

Doran, George Louis — Mass.
B.S. 1949, Boston University

Doran, Sharon Louise — Va.

Dorish, John Jerome — Pa.

Dorsey, Guy Houston — Md.

Dorsey, Leona E. — Va.
A.B. 1927, Goucher College
A.M. 1931, Johns Hopkins University

Dorsey, William Walter — N.J.

Dove, Charles Crawford — Ala.

Dowland, Jacques Stone — Md.

Dougherty, Dale Allen — Va.

Dougherty, Harold Joseph — Md.
A.B. 1955, The George Washington University

Dougherty, Louis Leighton — Pa.

Dougherty, Virginia Baxter — Va.
A.B. 1935, Texas State College for Women
A.M. 1951, The George Washington University

Doughty, Lowell Lawrence — Fla.
A.B. 1954, Mt. Union College

Douglas, Doris Stanfield — Va.
A.B. 1950, Johns Hopkins University

Douglas, Frances Carolyn — Va.

Douglas, Forman Edward — Fla.

Douglas, Fred Leeman — Fla.

Douglas, Paul Governor — D.C.

Douglas, Virginia Frances — D.C.

Douma, Wayne Vern — Mont.

Douma, Nicholas George — D.C.
A.B. 1953, The George Washington University

Dowdy, Sam Gene — Mo.
A.B. 1946, A.M. 1948, The George Washington University

Dowling, Elliot Gordon — D.C.

Dowling, James Edward — Ind.

Downey, Paul McEuen, Jr — D.C.

Downing, Paul Sampson — Pa.

Downs, Charles Dowell — Ill.

Downs, Claire Marie — Mass.
B.S. 1949, State Teachers College at Boston

Downs, Jessie Gerber, Jr — Va.

Downs, Michael Emery — Va.

Doyle, Edward Joseph — N.Y.
B.S. 1950, Syracuse University

Doyle, Herbert Aloysius — Md.
A.B. 1954, The George Washington University

Doyle, Joseph Thomas — Va.

Doyle, Mahlon Eugene — Va.
A.B. 1949, The George Washington University

Doyle, Thomas Francis — Va.
A.B. 1949, Harvard University

Dozier, Robert Franklin — Va.

Drabek, Jaroslav A. — Pa.
A.B. 1953, Washington and Lee University

Draheim, Nancy Mae — Va.

Drain, Thomas Thorpe — Va.

Draina, Rita M. — Va.

Draine, Richard Peter — Va.
A.B. 1937, M.B.A. 1942, University of Chicago

Drake, Dorothy Georgette — D.C.
A.B. 1935, The George Washington University

Drake, Hugo Hess — Va.
B.E.E. 1950, University of Colorado

Drake, Jerome — Va.

Draper, Elizabeth Kohl — Va.
A.B. 1934, A.M. 1937, The George Washington University

Draper, Harold Wesley — Va.
A.B. 1934, Baylor University

Draper, Henry E. — Va.
B.S. 1954, Brigham Young University

Draper, James Kenneth — Va.

Draper, Jean Anne — Va.

Draper, Linda Wendroff — Va.

Drew, Charles Rostock — Va.

Drew, Joan Hunter — Va.

Drewry, Stephen — Va.

Dreyfuss, Daniel Augustus — Va.

Driggers, Raymond Lavern — Va.

Driscoll, William John — Va.
B.B.A. 1944, Manhattan College

Droege, Lois Vogel — Va.
B.S. 1943, University of Cincinnati

Druff, Philip Marvin — Va.

Drummond, Robert Joseph — Va.
B.S. 1952, Fordham University

Drury, Penelope Benedik — Va.

Drury, Nancy Jane — Va.

Drysdale, Daniel Clinton — Va.

Drysdale, James Champ — Va.

Drysdale, Virginia Jane — Va.

Duarte, Eduardo Lacunda — Va.

Duffy, Jeanne Frances — Va.

Dryer, Gunther Heinz — Ill.
Ph.B. 1941, University of Chicago

Dryer, Katherine — Va.
A.B. 1941, Iowa Wesleyan College
A.M. 1943, Columbia University

Dryden, Barnard Reed — Va.
B.S. 1951, Kansas State College

Dryer, William Dawson, Jr — Va.

Dubendorf, Jeanne Miller — Va.

Dubinsky, Arnold J. — Va.

Dubinsky, Eunice Linda — Va.

Dubinsky, Sidney — Va.
B.S. in E.E. 1949, University of Rhode Island

Du Bose, John Wesley, Jr — Va.

Ducharme, Leon — Va.
B.S. 1953, New York University

Ducote, Richard Joseph — Va.

Duda, Paul Joe — Va.

Dudley, George Hayden
Dudley, James William — D.C.
Dudley, Rachel Mansourian — Iowa
Dudrow, William Norwood — D.C.
A.B. 1965, Randolph-Macon College — Va.
Dudzik, Sylvester Peter
Duerbeck, Warren Burton — Md.
Duesterdick, Ross Herman — D.C.
B.S. 1951, Rutgers University — N.J.
Duff, Jear, Carolyn
Duff, William Grierson — D.C.
Duffee, Lonnie Cunningham — Va.
Duffy, Janet Hesen — D.C.
A.B. 1955, Queens College — Va.
Duffy, Melanie Marin
A.B. 1958, Dartmouth College — D.C.
Duffy, Raymond Patrick
Dufour, Eleanore Generes — D.C.
A.B. 1951, The Citadel — La.
Dugan, John Joseph
E.M.E. 1954, Rensselaer Polytechnic Institute — N.Y.
Dugger, Dorothy Conner
A.B. 1912, Wellesley College — D.C.
Duke, Jesse C.
Duke, Thomas Edward — Va.
DuLaney, Donald Allan — Md.
Dulman, Charles Benjamin, Jr. — Md.
Dulwadi, Sambhiromya, Prasan — D.C.
LL.B. 1944, University of Thammasat — D.C.
Dun, Catherine Whipple
Duncan, Bruce Burke — D.C.
Duncan, Clara Louise — Texas
Duncan, Diane Tanny — Ind.
Duncan, Edward Caton, Jr. — Calif.
Duncan, John Edwards — Va.
Duncan, John Wesley, Jr. — D.C.
Duncan, Vance — Va.
B.C.E. 1926, Ohio State University — D.C.
Dunfee, Charles Logan
Dunham, Barbara Joan — D.C.
Dunham, Franklin George — Va.
Dunham, James Quenter — Va.
Dunkelman, Lawrence — Va.
B.E.E. 1928, E.E. 1949, Cooper Union — D.C.
Dunkle, Maurice Albert
B.S. 1931, Allegheny College — Md.
A.M. 1937, Columbia University
Dunlap, James Jennings II
Dunlap, John Clark — Va.
A.B. 1954, University of Washington — Mo.
Dunn, Alanson Bigelow
A.B. 1938, University of Texas — Va.
LL.B. 1955, The George Washington University
Dunn, Carl Edward
Dunn, Florence Wright — Md.
Dunn, William Francis — D.C.
B.E.E. 1955, The George Washington University — Md.
Dunnage, William Charles
A.B. 1954, The George Washington University — D.C.
Dupre, Marcy Marlows, Jr.
B.S. 1919, U.S. Naval Academy — Va.
Dupree, Fred Ernestie
B.S. 1955, University of Tennessee — D.C.
Dupree, Grace Scott
Durell, Vreeland Gurney — Md.
B.S. in F.S. 1954, Georgetown University — D.C.
Durkan, Stanley Lorenzo
Durkey, Raymond Eugene — Ill.
Va.

Durret, Janice Kay — Va.
Dussera, Rodney Joseph — N.Y.
B.S. 1950, U.S. Naval Academy
Dusenbury, Richard C. — S.C.
A.B. 1948, University of South Carolina
LL.B. 1951, The George Washington University
Dustin, Virgil Lorrain — D.C.
Dusty, Robert Smith — Ohio
Duval, Marilyn Anne — Mass.
Duvall, Coghlan Leyer — Va.
A.B. 1950, Michigan State University
Duvall, John Hart — D.C.
A.B. 1948, Principia College
Duvall, John Lyon McLeod — Md.
Dwan, Ralph Herbert, Jr. — D.C.
A.B. 1954, University of Michigan
Dwinnell, Dana Leigh — D.C.
Dwyer, Carl Raymond — D.C.
B.S. 1954, U.S. Naval Academy
Dwyer, Harold James — D.C.
Dwyer, James Joseph — Md.
Dwyer, James Eugene — Md.
B.S. 1948, American University
Dwyer, Richard Edward — D.C.
A.B. 1951, Clark University
Dybeck, Alfred Charles — Va.
A.B. 1956, The George Washington University
Dyberg, Roger Sundal — Va.
B.S. 1948, University of Florida
Dydek, Stanley — Ohio
Dye, Emmett Charles — Va.
B.S. 1921, South Dakota State College
M.S. 1925, University of Wisconsin
Dyer, James Wesley — Va.
A.B. 1955, Brigham Young University
Dyer, Peter Standish — D.C.
Dyer, Richard Henriksen — D.C.
A.B. 1954, Yale University
Dyess, Henry Hanson — Va.
Dymm, Thomas Henry — Mass.
Dziuk, Myron Michael — N.J.

E

Eagan, Charles Gary — Md.
Eagen, Caroline Robert, Jr. — Va.
B.F.S. 1944, Georgetown University
Eagon, Helen Dunn — W.Va.
Eaganton, Patricia Ann — D.C.
Eagon, Mildred Abigail — D.C.
Eagon, Thomas Link — Va.
Eagon, Lawrence Joseph — D.C.
A.B. 1952, Harvard University
Earl, Marion Eleanor — Md.
B.S. 1954, Wilson Teachers College
Earp, Harold Ford — Va.
B.S. 1938, University of Maryland
M.S. 1954, The George Washington University
Easley, John Lawson
Easter, Theodore McCord — Md.
Eastman, Edwin Frank — Md.
A.B. 1951, Kent State University — D.C.
Eaton, William Norman
A.B. 1954, The George Washington University — D.C.
Eaton, Lawrence Hammond, Jr. — Ga.
B.S. 1934, U.S. Naval Academy
Eaton, Alexander Crane
Eaton, William James — Va.
Eavenson, Lenny Ivan — D.C.
A.B. 1949, Catholic University — D.C.

Easton, Carl Wilbur — Va.
Eastridge, Bert Hyder, Jr. — Tenn.
A.B. 1952, Emory and Henry College
Eastwood, Terrell Randolph — N.M.
Eaton, Nelson Warner — D.C.
Eberly, Joyce Eileen — Nebr.
A.B. 1955, The George Washington University
Ebert, Eugene — D.C.
A.B. 1952, The George Washington University
Eberts, Joseph Warren — D.C.
B.S. 1950, Pennsylvania State Teachers College, Kutztown
Eby, Amy Bowen — Md.
A.B. 1919, Shepherd State College
Echegaray, Manuel de — D.C.
A.B. 1952, LL.B. 1955, The George Washington University
Echols, Marion Patton — Va.
B.S. 1945, Virginia Military Institute
Eckel, John Lawrence — Md.
Eckert, Gary Gene — Oreg.
A.B. 1953, Oregon State College
Eckert, James Edmund — N.J.
B.S. in E.E. 1946, University of Texas
Eckley, Elizabeth Doreene Fish — Va.
A.B. 1941, Marshall College
Economides, Alexandra Mattheos — Greece
Economon, Straty Harry — D.C.
B.S. 1954, The George Washington University
Eddy, Asa Carlton — D.C.
Eddy, Graham Samuel — Va.
Edelman, Leighton M. — D.C.
A.B. 1946, San Francisco State College
Edelsheim, Theodore Edward — D.C.
A.B. 1952, The George Washington University
Edelson, Charles Bernard — Md.
B.B.A. 1949, University of New Mexico
M.B.A. 1950, Indiana University
Edelstein, Richard — N.Y.
A.B. 1952, Cornell University
Eden, John — N.Y.
A.B. 1951, New York University
Edenfield, Ruth — Ga.
Ederma, Velio — Md.
Edgar, Tomas A. — D.C.
Edgerton, Catherine Griffith — Md.
Edgren, Eileen Jo — D.C.
Edlavitch, Irwin Paul — D.C.
Edlebeck, Barbara — Va.
Edmark, Inez Helen — D.C.
Edmonds, Carter Morse — Va.
A.B. 1941, American University
Edmonds, Sadie Ellen — Va.
Edmondson, Carolyn Gene — Tenn.
B.S. 1951, University of Tennessee
Edson, Andrew Warden — D.C.
A.B. 1925, Dartmouth College
A.M. 1927, Harvard University
Edwall, Warren Emerson — N.J.
A.B. 1950, The George Washington University
Edwards, Alletta Prentiss — Md.
Edward, Barbara Ann — D.C.
Edwards, Carolyn Anne — Md.
Edwards, Carolyn Jean — N.C.

Edwards, Gordon Carlton — Va.
B.S. 1937, Worcester Technological Institute
Edwards, Grant Campbell — D.C.
Edwards Katherine Alison — D.C.
Edwards, Lonnie Lee — Va.
B.S. in M.E. 1950, North Carolina State College
Edwards, Millicent Elizabeth — D.C.
B.S. in Ed. 1951, Wilson Teachers College
Edwin Gabriel — Md.
B.S. 1949, M.S. 1951, The George Washington University
Egan, Charles Alfred — Va.
Egan, Lucy Ellerbe — La.
A.B. 1951, Hollins College
A.M. 1953, Stanford University
Egbert, John Paul — Md.
Egbert, Lawrence Deems — Md.
A.B. 1948, Johns Hopkins University
M.D. 1952, University of Maryland
Egbert, William Richard — D.C.
B.S. 1952, Brigham Young University
Eggers, Allen Pershing — Va.
B.S. 1955, Indiana University
Eglington, Arthur Rudard — D.C.
B.Ch.E. 1953, University of Delaware
Ehle, Arthur Kendrick, Jr. — Va.
Ehrle, Raymond Albert — D.C.
A.B. 1951, Syracuse University
Ehrlich, Stanley — D.C.
Ehrmann, Frances Lee — Va.
A.B. 1954, University of California at Los Angeles
Ehrsam, Helen Gertrude — Va.
Eid, Gamal Hassan — D.C.
A.B. 1951, University of Cairo
Eisenbrode, Ralph Francis — Md.
A.B. 1950, Lebanon Valley College
Einheber, Albert — D.C.
A.B. 1948, M.S. 1950, The George Washington University
Eisen, Jacob Nathan — Md.
A.B. 1950, Brooklyn College
Eisenberg, Philip — D.C.
Eisenberg, Warren Wolff — N.J.
B.S. 1954, The George Washington University
Eisenberger, Dorothy Evelyn — Ohio
Eiserman, David Duane — Va.
Eising, Donald Clifford — D.C.
Eisinger, Jane Schroeder — D.C.
Ekendahl, Lillian Mabel — Pa.
Eckholm, Carl Francis — D.C.
Ekman, Carl Edward — D.C.
Ekman, Florence Ethel — D.C.
Elbot, Hugh George — Va.
Doctor of Law 1934, Charles University, Czechoslovakia
Elder, Vernon David — D.C.
Elder, William Huffman — Ill.
B.S. in Ed. 1951, Eastern Illinois State College
Eldridge, Luella — D.C.
Eldridge, Scott Magruder — Va.
Elgin, Jerry Donald — D.C.
Elia, Pearl Nina — Calif.
A.B. 1948, University of California at Los Angeles
Elison, Larry M. — D.C.
A.B. 1955, Idaho State College

Elkin, Evelyn Va.
Elkins, Sister Mary Pa.
Elkins, Annie Stephen Md.
Elkins, Natlee Jane W Va.
Elko, Helen Pa.
Elkus, Ariel D.C.
Ellcott, Joy D.C.
Ellinger, William Belven D.C.
B.S. in Ed. 1955, Pennsylvania State Teachers College, Bloomsburg
Ellington, William Thomas N.C.
A.B. 1952, Duke University
Elliott, Jerry Dean D.C.
Elliott, John Earle, Jr. Md.
Elliott, Martha Sue D.C.
Elliott, Mary Jean Md.
Elliott, Robert A. D.C.
A.B. 1951, The George Washington University
Elliott, Robert Sydney D.C.
A.B. 1942, Reed College
Ellis, David Allen Md.
Ellis, Faith Pembridge Va.
B.F.A. 1953, Pratt Institute
Ellis, George Joseph, Jr. Md.
A.B. 1952, Catholic University of America
Ellis, Gwalys Middleton Md.
B.S. 1944, Maryland State Teachers College
Ellis, Jack Marshall D.C.
Ellis, John Pope Pa.
A.B. 1954, Allegheny College
Ellis, John Millar Va.
A.B. 1943, Davis and Elkins College
Ellis, Margaret Seward D.C.
A.B. 1952, Oberlin College
Ellis, Walter John Pa.
B.S. 1955, Carnegie Institute of Technology
M.S. 1942, Syracuse University
Ellis, Wendell Thompson III Va.
Ellmer, Feodora Muller D.C.
A.B. 1946, A.M. 1948, The George Washington University
Elmendorf, James Fabellmer N.Y.
Elmore, Rebecca Warren D.C.
El Nagar, Mohamed Rashad D.C.
El Nagar, Nazar Nadeel Iraq
B.S. 1952, Michigan State University
Elson, Jean Mattie N.J.
Elston, Margaret Elizabeth N.Y.
Elston, Orrin Samuel Va.
Elwell, Victor Bernard Va.
A.B. 1941, St. Olaf College
Elwood, Edward Woodruff Va.
B.S. Univ. Illinois, 1948
Elwood, Joseph Lyle D.C.
Elwood, Thomas Margaret Md.
Ely, Richard D.C.
A.B. 1926, University of Maryland
Ely, Virginia Richardson Calif.
Ely, Joseph Lucius Md.
Ely, Marion Thomas W Va.
A.B. 1952, Davis and Elkins College
Emanuel, Lorraine Culver D.C.
Emerson, Vernon Marion
Emerson, Ralph Curtis D.C.
B.B.A. 1952, University of Oklahoma Kans.
Emerson, Robert Allen
B.S. 1951, University of Maryland Va.
Emerson, Harold Leonard
A.B. 1951, The George Washington University Va.

Emerson, Margaret Wagner Va.
Emhardt, Charles David Va.
B.S. in M.E. 1952, Purdue University
LL.B. Harvard University
Emma, Paschal Joseph Md
A.B. 1950, The George Washington University
Emmerson, Annie Cooke Va.
Emmerson, Mary Elizabeth Va.
Emory, Dannie Wright D.C.
Emory, G. Meade D.C.
A.B. 1954, The George Washington University
Emory, Jonna Ann D.C.
Endersbee, Eleanor Anne D.C.
A.B. 1945, Macalester College
Enevoldsen, Mary Crow Colo
Enfield, Daniel Leon Mich.
B.S. 1955, Wayne University
Engel, Mary Louise D.C.
Engel, Norman Robert D.C.
Engelhardt, Thomas Francis Va.
A.B. 1950, University of Wisconsin
England, James Cornell D.C.
England, James William Va.
B.S. 1955, The George Washington University
Engle, Eldean Grove, Jr. Va
B.S. 1943, Pennsylvania State Teachers College, Mansfield
Engle, Fred Jewel III Calif.
Engle, Samuel William Pa
B.S. 1953, Pennsylvania State University
Engstrom, Jerald Noel Utah
B.S. 1951, University of Utah
Enfield, Eva Randolph Va
Enfield, Lyle Edwin Md
Ennis, Michael Md
Ennis, Phillip Samuel Md
Epling, Mary Lewis D.C.
B.S. 1955, American University
Eppard, Leonard Calvert D.C.
Epstein, Bernice Seymour D.C.
A.B. 1954, The George Washington University
Epstein, Doris Engelman D.C.
Epstein, Estelle Cookie D.C.
B.S. 1951, Madison College
A.M. 1953, The George Washington University
Epstein, Matt D.C.
B.S. 1955, Wilson Teachers College
Epstein, Norman N.J.
B.Metal. Eng. 1951, Rensselaer Polytechnic Institute
Epting, Elizabeth Jeannette D.C.
Erazo, Louise Curtis D.C.
B.M. 1943, University of Michigan
Erbe, William Emil D.C.
B.S. 1952, Wayne University
Erickson, Clark Allen Wis
A.B. 1954, Ripon College
Erickson, Richard David N.D.
Erickson, Roger Wayne D.C.
B.S. 1956, University of California
Erickson, Mary Karen Va.
Erickson, William Lars Md.
B.S. in M.E. 1951, University of Michigan
Erickson, Kenneth Wayne D.C.
Erkenbeck, Richard Vernon D.C.
B.S. 1952, University of Maryland
Erkenbrack, Clara Md

Erlick, David Payson — Md.
A.B. 1947, Harvard University
Erskine, Robert Joseph — Maine
Ertel, Jack R. — D.C.
B.S. 1950, University of Pittsburgh
Ervin, Nancy Lee — W.Va.
Escher, George Fred — Va.
Eschmeyer, Barbara Jean — Va.
Eskes, James Norman — N.D.
A.B. 1950, The George Washington University
Espenshade, Park William, Jr. — Md.
Espey, Elizabeth Schobaker — D.C.
B.F.A. 1951, Rhode Island School of Design
Espey, Henry Clay — D.C.
Esposito, Louis Nicholas — N.J.
A.B. 1935, Moravian College
Esser, William Bernard
Essman, Cynthia Ann — Va.
Estrick, Abraham Joseph — Va.
LL.B. 1948, Rutgers University
Estep, Frank Leonard — Pa.
Estepp, Anna Ruth — Va.
Estes, Robert Calvert — W.Va.
Estill, Alexander Denham, Jr. — D.C.
Etelson, Jerome Howard — Md.
B.S. 1955, University of Maryland
Etheridge, Bob Bryan — D.C.
Etheridge, David Larry — Okla.
Etheridge, William Scott, Jr. — Ind.
B.M.E. 1951, North Carolina State College — N.C.
Etre, William Lee, Jr.
Evatt, Roger — Va.
A.B. 1954, Haverford College — D.C.
Eutemeyer, Harry Edward — Ill.
Everett, Selman Isaac — Md.
B.S. 1950, University of Maryland
Evans, Dorothy Anne — Va.
B.S. 1950, University of Maryland
Evans, Elizabeth Ellen — Ohio
Evans, Elizabeth Zentner — Md.
A.B. 1928, A.B. in L.S. 1932, University of Michigan
Evans, Evelyn Lucille — Minn.
A.B. 1949, A.M. 1950, University of Minnesota
Evans, James Paul — Va.
Evans, Lenny Ross — D.C.
B.S. 1947, Bishop College
Evans, John Benjamin — D.C.
A.B. 1923, University of Virginia
Evans, John Jacob — Pa.
A.B. 1947, Lehigh University
M.S. 1951, The George Washington University
Evans, Kent Anthony — Va.
Evans, Phyllis Steere — D.C.
Evans, Robert Edward — Va.
Evans, Robert Lester — Va.
Evans, Ron Lester — Md.
B.S. 1949, Indiana Central College
M.S. 1954, The George Washington University
Evans, Virginia
B.S. 1953, University of Wyoming
Evans, Walter Pantaine
Evans, William Benjamin — D.C.
B.S. 1943, University of Maryland
A.M. 1946, Columbia University
Evans, William Jacob — D.C.
Evasovich, John — Nev.
B.S. 1948, U.S. Naval Academy
Everett, Franklin Morton — D.C.
B.S. 1950, The George Washington University
Everett, Horace Jud — Texas
Everett, Katherine Lucile — D.C.
Everett, Woodrow Wilson, Jr. — Va.
Ewen, Julius Francis — D.C.
Eynes, William Joseph — Pa.
Eyth, Victor Peter — D.C.
Ezrin, Rhoda

F

Faass, Robert Temple — Md.
B.S.E. 1948, Princeton University — N.J.
Fairbrae, Austin John — D.C.
Fairchild, Frank J. — N.Y.
Fairkler, William Albert — D.C.
Fadeley, Jane McNeal — Pa.
A.B. 1951, The George Washington University — Va.
Fagan, John — Md.
B.B.A. 1951, College of the City of New York — Md.
A.M. 1955, Bucknell University — Md.
Fahey, James Daniel — N.Y.
Fahl, Garrett Alden — D.C.
Fahnestock, Ann Marie — Ind.
Fahnestock, Robert Kendall — N.C.
B.S. 1954, University of Illinois — Ill.
Fahrenger, Sandra Reed — Va.
Fahs, Betty Eileen — D.C.
B.S. in Ed. 1951, Western Reserve University — Ohio
Fahrney, Jack Edward — Md.
Fain, Charles J. — Texas
LL.B. 1951, University of Missouri
Fairchild, Dale Emerson — Va.
B.S.E. 1938, Arkansas State College — Ohio
M.S. 1941, Louisiana State University — Md.
Fairchild, John Cowan — D.C.
Fairchild, John William Flood — Ill.
A.B. 1953, Harvard University — Minn.
Fairley, Scott Vernon — Va.
Fairon, Edmund Wanton Jordin — D.C.
A.B. 1948, A.M. 1950, The George Washington University — Va.
Fakhoury, Adel Zaki Ahmad — D.C.
Falconelli, Alfred Alexander — D.C.
Falconer, Joseph — Pa.
Falk, Beverly Jeanne — D.C.
Falk, David Mortimer — Va.
B.S. 1943, M.S. 1945, Massachusetts Institute of Technology — D.C.
Falk, Florence — Md.
A.B. 1948, The George Washington University — D.C.
Falk, Maynard James — Va.
Faller, Rodney L. — Md.
Fallon, George Francis, Jr. — D.C.
Fallon, John Edward — Md.
A.B. 1951, Clark University — Texas
Fallon, Pauline Frances — Va.
Fallonfield, Frank Carroll — D.C.
B.S. 1951, University of Maryland — Va.
Fanberg, Marty Isadore — D.C.
Fanning, Paul Anthony — D.C.
Fant, Stanley Livingston — D.C.
B.S. 1952, Wilson Teachers College
Farah, Winifred Todd

Faraghmand, Sajed Shamlou — Iran
A.B. 1955, University of Dubuque
Faram, Harvey Dean — Md.
B.S. in E.E. 1950, M.S. in E.E. 1951, University of Michigan
Faramarzi, Andrew Reed — D.C.
A.B. 1958, University of Maryland
Farber, David J.
Farber, Norman Elliot — N.J.
Fargo, Yousef Aziz — N.Y.
A.B. 1955, Washington Missionary College — Md.
Farha, Sohayl Jamil
A.B. 1953, West Virginia University — W.Va.
Farino, Salvatore Louis
A.B. 1953, Duquesne University — Pa.
Farley, Russell Judson
Farley, Suzanne — N.J.
Farley, Thomas Albert — D.C.
B.S. 1954, The George Washington University — D.C.
Farmakides, John Basil
B.S. 1955, Western Reserve University — Ohio
Farmer, Anna Bonnie
Farmer, Richard Lan — D.C.
Farnsworth, William Yates — D.C.
A.B. 1953, Brigham Young University — Calif.
Farquhar, Thomas Brakley
Farquharson, Diane — D.C.
Farrant, Anne Patricia — D.C.
Farrell, George Edwin — D.C.
A.B. 1947, Stanford University — Calif.
Farrell, Thomas Edmonston
Farris, Frederick, Joseph — D.C.
A.B. 1958, The George Washington University — Va.
Farris, Raymond
A.B. 1955, The George Washington University — N.C.
Farrow, Rowland Paul
A.B. 1954, Catholic University of America — Va.
Farsetta, Michael
Fasig, Lois L. — D.C.
B.S. in Ed. 1932, Ohio State University — D.C.
Fassett, Jane Warner
Fast, Robert Eugene — D.C.
Fatland, Alexander Johann — Pa.
Faucett, Josephine Brock — D.C.
Faustinov, Gregorios M. — D.C.
B.S. 1947, Mercer Teachers College — D.C.
Faust, Ariand Kenneth
A.B. 1958, Kansas University — Kans.
Faust, Wesley Eberhart
A.B. 1928, Iowa State Teachers College — D.C.
Fauver, Stanley
A.M. 1943, University of Florida — D.C.
Fawaz, Ina Aziz — D.C.
B.S. 1954, The George Washington University
Fay, Eugene Therese
Fay, John Thomas — Pa.
Fay, John Thomas, Jr. — Va.
Fay, William T. — Md.
Fearon, Jefferson, Ball — Md.
Fearon, Elizabeth McGrath — Va.
Fearing, Ben Wayne — Md.
A.B. 1953, Drake University — D.C.
Feddersen, Ralph Henry
A.B. 1941, The George Washington University — Va.

Feder, David Byrl — D.C.
B.S. in Ch. E. 1948, University of Missouri
Federmeyer, Robert Stanley — Va.
A.B. 1951, Queens College
Fedorko, Joseph — D.C.
B.S. 1952, University of Maryland
Fee, Norman Francis — N.M.
B.S. 1952, Carleton College
Feeley, James Wilcox — Va.
Feeney, Edward Jude — D.C.
A.B. 1951, St. Anselm's College
Feeney, Mary Louise — N.Y.
Fees, James Rowland — Wash.
Feldhaus, Arlene Marie — Kans.
Feninger, Elizabeth Margaret — Va.
B.S. 1942, Pennsylvania State Teachers College, Bloomsburg
Feinstein, Bernard — D.C.
A.B. 1954, University of Colorado
Feit, John Francis — Md.
B.S. 1942, A.M. 1949, Fordham University
Feitel, Marcus — N.J.
Fell, Donald Conrad — Va.
B.S. in M.E. 1952, Purdue University
Felder, Clarence Rose — Ill.
Feldman, Edmund Henry — D.C.
A.B. 1954, The George Washington University
Feldman, Leon — Md.
B.Mus. 1942, Cincinnati Conservatory of Music
Feldman, Linda Daly — N.Y.
Feldman, Sheridan — Md.
Feldman, Sylvia Hollie — D.C.
Felegy, Edward Moody — Pa.
Felgar, Charles Warrington, Jr. — Fla.
B.S. in C.E. 1946, Virginia Polytechnic Institute
Fellbaum, Susan Carolyn — Ind.
Fellheimer, Neil Ira — N.Y.
Fells, Howard Clinton — D.C.
A.B. 1942, Henderson State Teachers College
A.M. 1943, George Peabody Teachers College
Felton, Vincent James — Pa.
Fendersen, Kenneth F., Jr. — Va.
A.B. 1950, Roanoke College
M.S. 1954, Boston University
Fendig, Nathan Lewis — N.Y.
Fendley, V. Williams — Va.
B.M.E. 1948, Brooklyn Polytechnic Institute
Fenick, John — N.J.
B.S. 1952, Rutgers University
Fenner, Joseph — Va.
B.S. 1951, U.S. Naval Academy
Fenstad, Henry Robert — N.J.
Fenster, Harvey Saul — D.C.
Fenton, Anne Mosemer — D.C.
A.B. 1954, The George Washington University
Fenton, Barbara Lorraine — Md.
Fenton, Donald Roberts — D.C.
Fenton, Laura Margaret — D.C.
Fenton, Helen D. — Va.
A.B. 1928, State College of Washington
Fenton, Joan Lorraine — Va.
Fenton, Lloyd Thomas, Jr. — Md.
Fentress, Alvin Kirkwood — Va.

Fentress, Dorothy Bruce — Va.
Ferero, Edward George — N.J.
A.B. 1954, The George Washington University
Ferguson, Howard Frank — Pa.
Ferguson, James Hilborn — Va.
Ferguson, Mary L. — Oreg.
Ferguson, Nadine Linda — D.C.
Ferguson, Nanita — W.Va.
Ferguson, Richmond Heath — Pa.
A.B. 1951, St. Vincent College
Ferguson, S. N. — Ala.
Fern, Benjamin Richard — D.C.
A.B. 1942, Queens College
Fernandez, Alexis Oswaldo — Puerto Rico
B.S. 1953, Georgetown University
Fernandez, Oscar S. Lorenzo — D.C.
LL.B. 1940, School of Law, Brazil
Fernandez, Theresa Margaret — Md.
B.S. 1952, A.M. 1953, Columbia University
Ferrara, Angelo Arthur — Md.
Ferrari, Mary Isabelle — D.C.
Ferrell, Jane Brower — Va.
Ferrell, Walter Harold — Va.
Ferrero, Jane Louise — D.C.
Ferreira, James Joseph — Conn.
A.B. 1940, Rhode College
Ferrill, Grace Cecelia — R.I.
A.B. 1948, LL.B. 1951, The George Washington University
Ferris, Betty Jean — Md.
A.B. 1948, Western Maryland College
A.M. 1954, Northwestern University
Ferris, Jean Marie — D.C.
B.S. 1948, Wilson Teachers College
Ferris, Joseph Edmund — Va.
Ferris, Stephen Anthony — D.C.
Fessenden, Arthur Anthony — Md.
Fessenden, John Stirling — Va.
A.B. 1952, Dartmouth College
Fessler, Barbara Ann — Va.
Fetterolf, Wallace Kermit — Va.
A.B. 1950, The George Washington University
Fetter, Seim — D.C.
Feula, James Joseph — N.J.
B.S. 1941, A.M. 1945, The George Washington University
Feustal, Doris Mae — Calif.
Fey, Nancy Lane — Ill.
Feyen, Leotta Cook — Va.
Fichter, Curtis Leroy — Md.
B.S. in F.S. 1947, Georgetown University
Fickey, Charles Joseph — W.Va.
A.B. 1951, West Virginia University
Fidanza, Nicholas Andrew — Pa.
Fidler, Donald Henry — Ill.
B.S. & M.E. 1943, University of Notre Dame
Field, Alexander Raymond — Va.
B.S. in Aero Eng. 1952, University of Michigan
Field, Lillie Lee — Tenn.
Fiedler, Ann Riggs — Va.
A.B. 1947, Antioch College
Fields, Mary Anna — Va.
A.B. 1954, The George Washington University
Fields, Murray Eugene — Ind.
Fields, Roland Carmel — Va.
A.B. 1950, The George Washington University
Fields, Theodore Martin — D.C.
Fier, Margaret Ely — Va.
Figley, Robert Louis — Md.
Fike, Dorcas Glen — Va.
Filcik, Julius Paul
B.S. in Ed. 1951, Pennsylvania State Teachers College, Indiana — Va.
Filcik, Shirley Odom
B.S. in Ed. 1951, Pennsylvania State Teachers College, Indiana — D.C.
Filipovitch, Svetlana — N.Y.
Filipowicz, Casimir Anthony — D.C.
Filkins, Carolyn Adelaide — Md.
Filsinger, Patricia Jean — Md.
Filsinger, Ruth Isabel
A.B. 1954, The George Washington University — D.C.
Finagan, Chester Rawlings — Va.
Finberg, Ann — S.C.
Finch, Elizabeth
A.B. 1950, Furman University — D.C.
Finch, Norma Jean — Va.
Finch, Roger Jamieson — Md.
Finch, Walter Gilbert
B.E. 1940, M.M.E. 1950, Johns Hopkins University
LL.B. 1948, M.B.A. 1949, Temple University
LL.M. 1949, The George Washington University — Va.
Fine, Marcia — Conn.
Fine, Martin Brian
A.B. 1951, University of Connecticut — D.C.
Fine, Sydelle Ann — Pa.
Fink, Pauline Cain — Pa.
Finke, Gordon Robert — Pa.
Finkel, Mitchell Wolf — Pa.
Finkelstein, Ronald Leon
B.S. in Ed. 1954, Pennsylvania State Teachers College, Shippensburg — Va.
Finlay, Helen King
A.B. 1945, Huntington College
A.M. 1947, The George Washington University — Md.
Finley, Jeanne Elizabeth
A.B. 1944, Antioch College — D.C.
M.S. 1951, Yale University — W.Va.
Finley, Sylvia Hayden — Va.
Finn, Gene Kelly — Va.
Finne, Grace Werring
A.B. 1933, University of Oslo
A.M. 1947, Bryn Mawr College
A.M. 1948, Johns Hopkins University — N.J.
Finnegan, Marcus Bartlett
B.S. 1949, U.S. Military Academy
LL.B. 1955, University of Virginia — Va.
Finnell, Robert Francis — Nebr.
Finney, Barbara Staley — D.C.
Finney, Charles Narber — Va.
Finnie, Frances Ruth
A.B. 1929, A.M. 1935, The George Washington University — D.C.
Finstad, Alice Olga
A.B. in Journ. 1947, Montana State University
A.B. in Govt. 1950, The George Washington University — D.C.
Finzimonti, Mary Clair
B.S. 1949, The George Washington University

Ferda, Richard Arthur D.C.
First, Stanley Alfred D.C.
B.B.A. 1949, Miami University
Firth, Lewis Raymond Va.
Fischer, Martin Nathaniel Md.
Fishback, James Frederick Md.
Fishburne, Florence Claire Fla.
Fishburne, Ralph Tipton Md.
A.B. 1948, University of Richmond
Fiske, Stephen Sidney Va.
A.B. 1943, The George Washington University
A.M. 1955, American University
Fisher, Carl William Va.
Fisher, Donald Vincent D.C.
Fisher, Edgar Burdette Tenn.
Fisher, Fred Pa.
B.S. in E.E. 1952, Drexel Institute of Technology
Fisher, Fred Wanchison
Fisher, John Bruce Va.
B.S. 1950, St. Lawrence University Ohio
Fisher, John Gibson
Fisher, Lewis Joseph Va.
Fisher, Patricia Ann Va.
Fisher, Robert Marvin Va.
Fisher, Sperry Thomas D.C.
Fisher, Walter Callard D.C.
B.S. 1[illegible] Newark College of Engineering Md.
Fishman, Alan Donald
Fishman, Harold D.C.
A.B. 1948, Rutgers University N.J.
Fite, Thomas Campbell
B.S. 1952, North Carolina State College N.C.
Fitton, Harvey Nelson, Jr. Va.
A.B. 1949, The George Washington University
Fitts, Nathan Cheney
A.B. 1939, Amherst College Md.
LL.B. 1948, Harvard University
FitzGerald, Nancy Catherine Va.
Fitzpatrick, Edward James D.C.
Fitzpatrick, James Francis
A.B. 1948, Maryland State College Md.
Fitzpatrick, William Joseph
Fitzwater, Rue Jean Mass.
A.B. 1948, Marshall College Md.
Flack, Frank Steele
B.S. 1947, Stetson University D.C.
Flagg, Barbara Lee
Flaherty, Katherine Josephine D.C.
Flaherty, Ruth Anne D.C.
Flanagan, Robert Irvin, Jr. Va.
B.S. 1950, Virginia Polytechnic Institute Md.
Flang, Jack Valentine, Jr.
Flannagan, Karen D.C.
A.B. 1949, The George Washington University Va.
Flannery, Robert Meynard
B.S. 1951, Utah State Agricultural College Md.
Flannery, Thomas James
B.C.E. 1948, Catholic University of America D.C.
Flanzraich, Robert Monroe
Flatt, Edward Sewell, Jr. D.C.
A.B. 1947, M.P.A. 1950, Cornell University Va.
Flather, Alfred Chester, Jr.
B.S. 1952, Wilson Teachers College D.C.
Flax, Martin Barry Md.

Fleetwood, Charles Edward Va.
Fleisher, Eva Winifred Md.
A.B. 1950, The George Washington University
Ph.D. 1953, University of Lund, Sweden
Fleming, Babette Lucia Fla.
LL.B. 1951, National College of Education
Fleming, Catherine Lane D.C.
B.S. 1953, Northwestern University
Fleming, Cecile Y. Va.
A.B. 1951, Temple College
Fleming, Edward Sidat D.C.
A.B. 1951, University of North Carolina
A.M. 1952, University of Texas
Fleming, Elizabeth D.C.
Fleming, Elizabeth Watson D.C.
B.S. 1943, Fayetteville State Teachers College
Fleming, Henry Paul, Jr. D.C.
Fleming, Maurice Carl Md.
A.B. 1934, Western Maryland College
A.M. 1948, Ed.D. 1952, Columbia University
Ph.D. 1942, New York University
Fleming, Rosemary Therese D.C.
Fleming, Vivian Williams W.Va.
A.B. 1924, Spelman College
Fleming, William Kenneth D.C.
B.S. 1[illegible], Fayetteville State Teachers College
Fleming, William Rudd, Jr. Md.
Fletcher, Catherine Md.
Fletcher, Catherine Elmore D.C.
Fletcher, Elsie Josephine Va.
Fletcher, Robert Foster Va.
B.S. 1950, Virginia Polytechnic Institute
Fletcher, Thomas Williams Pa.
A.B. 1[illegible], College of Wooster
Fletcher, William Stone D.C.
Flexner, Anne D.C.
Flick, Donald Franklin W.Va.
A.B. 1947, M.S. 1947, West Virginia University
Flick, Ramon George Va.
A.B. 1924, Pennsylvania State University
Flinn, Hugh H., Jr. Md.
Flint, Foster Kellar Me.
Flint, Henry Mann D.C.
A.B. 1[illegible], Mt. Holyoke College
A.M. 1[illegible], New York University
Flocken, Paul Ira Pa.
A.B. 1[illegible], Lebanon Valley College
Flogerzi, Joseph Paul Mass.
A.B. 1[illegible], St. Ambrose College
Flood, James Joseph, Jr. N.J.
A.B. 1[illegible], Notre Dame University
Florence, Annie Mae D.C.
B.S. 1[illegible], Miner Teachers College
Flores, Irma Kans.
Flory, Rudolph Alfred Ohio
B.S. 1[illegible], University of Toledo
Flory, Justin Frederick Ohio
Flory, Mary Ann Ohio
Flournoy, Charles Woodlow Md.
LL.B. 1[illegible], The George Washington University
Flower, Harold Leopold Md.
Floyd, Karen Marie Mass.
Floyd, Shirley Margaret Mass.
A.B. 1[illegible], The George Washington University

Flynn, Caroline Lucas — Md.
Flynn, Frederick Lawrence, Jr. — Va.
Flynn, George Joseph, Jr. — Md.
E.M. 1939, University of Minnesota
Flynn, Rima Julien — D.C.
Foard, George Edward — Va.
Foer, Raymond — D.C.
Foerster, Herbert G. — D.C.
Folkemann, Ernest Frederick — Va.
B.E.E. 1948, The George Washington University
Folks, Helen Anne — Pa.
Follenzone, Robert Carl — D.C.
A.B. 1953, The George Washington University
Foley, Josephine Peers — D.C.
Folio, Michael Daniel — Pa.
Folio, William Joseph — Md.
Foltz, Joseph Roger — W.Va.
B.S. in M.E. 1937, B.S. in C.E. 1952, Carnegie Institute of Technology
Fonk, Theodore Ada — D.C.
Fonk, John William — Va.
Fontaine, Arthur Carter — Va.
Fonte, George William — Va.
B.S. 1942, U.S. Naval Academy
Foley, Dennis Daniel — Md.
Foote, Frances Marion — N.Y.
Foote, James — D.C.
Foote, Louis Brockway Chen — Md.
B.S. in E.E. 1931, Massachusetts Institute of Technology
Font, Jose Antonio — Puerto Rico
A.B. 1954, University of Maryland
Footman, Robert Rutland — Md.
Foote, Edward Finance — D.C.
A.B. 1951, Western Maryland College
Foote, William Cooper — D.C.
B.S. 1913, U.S. Naval Academy
Forbes, Charles Lee — Va.
B.S. 1939, Concord College
Forbes, Charles Sidney, Jr. — D.C.
Forbes, Donald Poetting — Va.
Forbes, Lelia M. — Ga.
Forbes, Mercer Bishop — Ga.
B.S. 1932, Northwestern University
A.M. 1936, Columbia University
Ford, Dolores Jane — D.C.
Ford, Francis Marshall — Md.
Ford, Joan Elizabeth — D.C.
Ford, Rose Marie — D.C.
Ford, Thomas Rutland — D.C.
Fontaine, Hugh Raymond — W.Va.
B.S. in Ed. 1950, A.M. 1955, West Virginia University
Fonseca, Jose Ignacio — Colombia
Fonseca, Mary Katherine — Va.
Fonte, Sonny Haggerty — Va.
Fontecchio, Augusto Angelo — Pa.
B.S. 1952, University of Pittsburgh
Forester, Cecil Raymond — Md.
Forrest, Thelma Brandon — Md.
Forrester, Myra — D.C.
Forsberg, Robert Andrew — Md.
B.S. 1947, University of Maryland
Forsell, Robert Myles — N.Y.
B.S. 1950, Webb Institute of Naval Architecture
Forst, Charles Francis — Md.
B.S. in Ed. 1950, Pennsylvania State Teachers College, Shippensburg
Forster, Rudolph — D.C.

Fort, Anna Beulah — D.C.
B.S. 1944, Wilson Teachers College
A.M. in Ed. 1951, The George Washington University
Forte, Benjamin Eugene — D.C.
Forte, Russell Thomas — D.C.
Fortune, Stanley Wayne — D.C.
Fortunato, Milo — Va.
Fosnes, Henry William — Md.
B.S. in Ed. 1951, Maryland State Teachers College
Foss, Herbert Thomas — D.C.
A.B. 1924, University of Chicago
Foster, Evanston Ann — Fla.
Foster, Harriet — D.C.
B.C.E. 1952, College of the City of New York
Foster, Matthew Francis — D.C.
Foster, Maxwell, Kenyon — D.C.
Foster, William George — N.J.
B.S. 1948, Drexel Institute of Technology
Fountain, Robert Darrow — N.J.
Fourche, James Lewis — Va.
Fowlkes, Nancy Jacqueline — Va.
Fowlkes, Raymond Henry — Va.
Fowler, Vita Frances — D.C.
B.S. 1936, Northwestern University
A.M. 1940, Fletcher School of Law and Diplomacy
Fowler, Basil Dodson, Jr. — Va.
Fowler, India Bell Carey — D.C.
A.B. 1941, The George Washington University
Fowler, Katherine Swann — D.C.
A.B. 1943, The George Washington University
M.Mus. 1948, Catholic University of America
Fowler, Marilyn Louise — D.C.
Fox, Barbara Anne — Va.
Fox, Cecil Lambert — Va.
Fox, Earl Leroy — Md.
A.B. 1947, Franklin and Marshall College
A.M. 1951, University of Pittsburgh
Fox, Edward Jackson, Jr. — Md.
A.B. 1950, A.M. 1952, Cornell University
Fox, Gertrude — N.Y.
Fox, Jerome B. — Ia.
Fox, John Leroy — D.C.
Fox, Marvin Herbert — D.C.
Fox, Phyllis Joan — Ind.
Fox, Sandra Jean — Md.
Fox, William Lloyd — Md.
A.B. 1941, A.M. 1945, Western Reserve University
Fox, Allan Bernard — Texas
A.B. 1951, University of Maryland
Fox, Arline Velma — N.Y.
Frankos, Albert Irwin — D.C.
Franklin, Jane Barbara — N.Y.
Franklin, Robert Lee — D.C.
Frank, David Hirsch — Md.
Frame, Calvin Lincoln — Md.
A.B. 1950, Washington Missionary College
Frame, James Hartwell — Md.
A.B. 1951, St. Johns College
Francisco, Genevieve Natali

Frances, Frances Consuelo D.C.
Francis, Leverett Mansell Mass.
Francis, William McCafferty Va.
A.B. 1954, The George Washington University
Francisco, Barbara Lee Va.
A.B. 1954, Illinois College
Franck, Glenn Herbert Md.
Franco, Franklin A. Va.
Ph.B. 1942, Providence College
Frank, Arnold Roy D.C.
A.B. 1926, A.M. 1928, Johns Hopkins University
Frank, Leroy Lloyd N.H.
B.S. 1939, University of New Hampshire
Frank, Mordechai Israel
Franke, Rose Magdalene Wis.
Frankel, Dessie Anona Md.
Frankel, John Henry Md.
A.B. 1952, St. Johns College
Frankel, Charlotte Edith D.C.
Frankel, Samuel LeRoy N.J.
B.S. 1949, Syracuse University
Frankfeldt, Carol Patricia D.C.
Franklin, Alfred Carl Va.
A.B. 1952, University of Virginia
Franklin, Annette Conn.
A.B. 1954, University of Connecticut
Franklin, Benjamin Arthur Md.
A.B. 1948, University of Pennsylvania
M.S. 1950, Columbia University
Franklin, Daniel Talmon D.C.
Franklin, George William Md.
B.S. 1954, Morgan State College
A.M. 1961, New York University
Franklin, Henrietta Bessye Md.
B.S. in Ed. 1934, Bowie University
A.M. 1952, New York University
Franklin, Linton Reed Pa.
Franklin, Philip Leslie Md.
A.B. 1942, The George Washington University
Franklin, Richard Bostwick Conn.
Franklin, William Henderson Va.
Franks, Louise D.C.
A.B. 1952, The George Washington University
Franks, Gerald
Frantz, Robert Bruce D.C.
Frantz, John Henry Va.
B.S. 1948, Notre Dame University Ill.
LL.B. 1951, Georgetown University
LL.M. 1954, The George Washington University
Fraser, Berenice Gibble
A.B. 1921, Juniata College D.C.
Fraser, Donald Bruce
Fraser, Marjorie Ann Md.
Fraser, Robert H. W.Va.
B.M.E. 1941, University of Minnesota Va.
Frazer, Matthew, Lorelle
Frazier, Sidney D.C.
B.M.E. 1951, College of the City of New York N.Y.
Frazier, Margaret Lenore
Frazier, Anna Katherine D.C.
A.B. 1926, Smith College Va.
Frazier, Florence L.
B.S. 1935, University of Virginia Va.
Frazier, Ray Lonnie
B.C.E. 1950, University of Texas Md.

Freas, Howard Jacob Jr. Pa.
A.B. 1950, A.M. 1951, Temple University
Frederick, David Eugene Md.
B.S. 1955, University of Maryland
Frederick, Paul Edward Va.
Fredrickson, Mat Jean Md.
Freedman, Hayley Gail Mass.
Freedman, Irving Melvin Mass.
B.S. in E.E. 1954, Northeastern University
Freedman, Irwin Stanley Pa.
A.B. 1955, Haverford College
Freedman, Jessie Louise D.C.
Freedman, Lewis Minn.
B.S. 1944, U.S. Naval Academy
Freedman, William Md.
A.B. 1948, Union University
LL.B. 1951, Albany Law School
Freeland, Isaac Hunter D.C.
A.B. 1954, University of Maryland
Freeman, Aaron Elliott D.C.
A.B. 1951, The George Washington University
Freeman, Abraham D.C.
Freeman, Austin Manbey Liberia
A.B. 1938, Liberia College
Freeman, Barbara Helen Va.
Freeman, Chester Eldridge Va.
A.B. 1954, Virginia Union University
Freeman, Cyrena Allen, Jr Md.
Freeman, Edward J. Mass.
Freeman, Harry Lee N.C.
Freeman, Jack Miller N.C.
B.S. 1949, Florida Southern College
Freeman, Jeremy John D.C.
A.B. 1953, Georgetown University
Freeman, John Franklin Pa.
A.B. 1948, Pennsylvania State University
Freeman, Joseph Lawson D.C.
A.B. 1948, Florida A. & M. College
Freeman, Patricia Bryden D.C.
Freeman, Pearson Harrison Md.
B.S. 1955, Morgan State College
Freeman, Virginia Lee D.C.
Freeland, Carol Lawrence D.C.
Fridge, Lenora Belle D.C.
Friedberg, Sylvia N.Y.
Friedlin, Alan Henry D.C.
Friend, Harold Rickard Md.
Friends, Georges Patrick Va.
French, Hope Sewell Ill.
A.B. 1950, Vassar College
A.M. 1951, Oxford University
French, Ina Mae Lucas D.C.
French, Jack Pitzer Va.
French, James Hungerford Jr W.Va.
A.B. 1942, West Virginia University
French, Orville Sidney Colo.
French, Stewart D.C.
A.B. 1929, Harvard College
LL.B. 1940, St. Johns University
LL.B. 1954, Catholic University of America
French, Carolyn Frances D.C.
Freneau, Alice Franklin Mass.
Frere, John Newman Md.
B.S. in A.E. 1955, Johns Hopkins University
Freester, Pauline Elizabeth Md.
Fretwell, Marvin Lewis D.C.
Freyer, Dorothy Kathryn Md.

Freyeisen, Rudolf Charles — Md.
A.B. 1949, University of Maryland
Frezza, Robert Joseph — N.J.
Fritts, Oscar — Texas
Frick, John Carl — Pa.
Frick, Edna Lena — D.C.
Frick, James Frederick — Va.
Fricka, Ronald Joseph — Ill.
Fricke, Gertrude Adela — Iowa
A.B. 1941, The George Washington University
Fridinger, John Albert, Jr. — Va.
Fried, Peter Alexander — D.C.
Friedlander, Florence — D.C.
Friedlander, Philip Peyer — D.C.
A.B. 1951, The George Washington University
Friedman, Abraham Philip — La.
A.B. 1951, Tulane University
Friedman, Antoinette Black — N.J.
B.S. 1942, Florida State College for Women
Friedman, Arnold — Wis.
B.S. 1949, Marquette University
Friedman, Irving Myer — Va.
Friedman, Joel — Va.
Friedman, John Marshall — D.C.
B.S. 1953, University of Maryland
Friedman, Lewis Samuel — D.C.
LL.B. 1906 New York Law School
LL.M. 1909, New York University
Friedman, Nancy Staley — Va.
Friedman, Sidney — D.C.
B.S. 1938, Long Island University
A.M. 1937, Columbia University
Friend, Bernice Eleanor — D.C.
Friend, George Samuel — Va.
B.S. in Engr. 1936, Princeton University
Frisby, Jon Chester — D.C.
B.S. 1941, Pennsylvania State Teachers College, Indiana
Frisby, Roy F. — Md.
B.S. 1929, Colorado Agricultural and Mechanical College
Frishman, Fred — Md.
B.B.A. 1947, College of the City of New York
Fritz, Bernard James — Md.
Fritz, Kathleen Rita — Va.
Fritz, Marie Elizabeth — Mo.
Frogley, Keith Alfred — Idaho
A.B. 1948, Brigham Young University
Froelig, Herbert Oliver — Va.
B.S. 1951, American International College
Frost, Lyle Gooden — Calif.
A.B. 1946, Wheaton College
Frost, Robert Lee — Va.
A.B. 1950, Maryville College
M.S. 1952, Louisiana State University
Froud, Warren William — Va.
Fruit, Claudia Jane — Va.
Frulla, Robert Joseph — D.C.
Fry, Barbara Marlene — Pa.
Fry, Joshua — D.C.
Fry, Roy Alexander — N.Y.
A.B. 1950, Iona College
Fryberger, Fay Elaine — Nev.
A.B. 1950, University of Nevada
Frye, Dianne Mae — Va.
Frye, Edward Dennis — Va.
Frye, Frances Louise — Ill.
Frye, Joseph Milton — Va.
Fryer, Mary Martine — Wash.
Fryer, William Thomas III — Md.
B.S. in E.E. 1955, Lafayette College
Fuchs, Henry — Va.
Fuchs, John Joseph — N.Y.
Fuchs, William Francis — Md.
Fufia, Joan — D.C.
Fuhrer, Neil Leonard — Pa.
Fulcher, Robert Wendell — Va.
Fullen, Wilbur Edwin — Md.
Fuller, Donald Walker — Maine
Fuller, Frances Patricia — Va.
Fuller, Frank Gardner — N.C.
B.S. 1939, Aurora College
A.M. 1947, The George Washington University
Fuller, Margaret Gibson — Va.
A.B. 1946, Mount Holyoke College
Fuller, Robert Lawney — D.C.
A.B. 1939, Bates College
A.M. 1941, Boston University
Fuller, Vernon Jack — D.C.
B.S. 1951, University of Maryland
M.S. 1953, The George Washington University
Fulton, George Leonard II — Ind.
A.B. 1954, Hanover College
Fulton, Mary Burke — D.C.
B.S. 1942, M.S. 1944, Columbia University
Fumia, Patricia Julianne — Conn.
A.B. 1949, Goucher College
Funkhouser, Curtis Lee — Va.
Funsten, Edward Hogue III — Ky.
Furber, Mildred — Mass.
Furr, Ruby Lydia — Texas
Fusco, Louis Virginia — N.Y.
Fusillo, Matthew H — Md.
Fuste, Gilberto — Puerto Rico
A.B. 1950, University of Puerto Rico
Fuyat, Henry Noels Jr. — Md.
B.S. 1946, University of Rhode Island

G

Gaardsmoe, John Newton — Pa.
Gabby, Geraldine Kay — Calif.
A.B. 1953, University of Redlands
Gabel, Louise Kuhn — Va.
A.B. 1941, Hunter College
M.S.W. 1945, Howard University
Gaber, M. Hosny Mohamed — D.C.
Gaber, Andrew John — D.C.
Gaegler, Francis Xavier Jr. — Md.
A.B. 1951, The George Washington University
Gaertner, Robert Montague — D.C.
B.C.E. 1945, The George Washington University
Gaffey, Marion Hauske — D.C.
B.S. 1943, University of Minnesota
Gaffney, Thomas John — Md.
Gagne, Edward Mead — Calif.
Gagon, Reyes Soto — D.C.
Gagnon, Julia Alfred — Mass.
B.S. 1952, Arnold College
Gagnon, Roberta Normand — Va.
B.M.E. 1954, Rensselaer Polytechnic Institute
Gailbreath, Mary Nell

Gaine, Virginia Marie — D.C.
B.S. 1951, Chestnut Hill College
Gaines, Marjorie Ward — La.
A.B. 1925, Florida State College for Women
Gaines, Sandra Evelyn — D.C.
A.B. 1954, A.M. 1955, University of Michigan
Gaines, Thomas Barrett — Va.
Gair, Robert Matson — Mass.
A.B. 1951, Brooklyn College
M.P.A. 1952, Syracuse University
Galbraith, William Bruce — Ariz.
B.S. 1953, Arizona State College, Tempe
Galer, Robert Edward — Va.
B.S. 1935, University of Washington
Galin, Victor — Md.
Gall, Robert Michael — D.C.
Gallagher, James Frederick — D.C.
Gallagher, Jean Marietta — Va.
A.B. 1954, The George Washington University
Gallagher, John Edward — Mass.
Gallagher, John Michael — Va.
A.B. 1954, The George Washington University
Gallagher, Martin Thomas — D.C.
Gallagher, Michael Graham — Va.
Gallagher, William Michael — Md.
Gallant, James Joseph — D.C.
Gallo, Herman — D.C.
Gallo, William Henry — N.J.
Gallogly, Lester Harold — Ohio
B.S. 1927, Denison University
A.M. 1929, Ohio State University
Galloway, Maxwell Lamont — Va.
A.B. 1938, Harvard University
Galloway, Rolland Warren — Va.
Gammar, Patrocinio Catchalian — Philippines
Gann, Caroline Jean — Md.
Gannon, Lelia Starnes — Md.
Gannon, Walter Corbett — Va.
Gantt, Janie Alfreda — D.C.
Gantto, Anthony Vincent — N.Y.
B.C.E. 1951, Brooklyn Polytechnic Institute
Gantzhorn, Robert William — Va.
A.B. 1954, University of Virginia
Gantzhorn, James Howard — Va.
A.B. 1951, University of New Mexico
Gantzhorn, Edwin Francis — D.C.
A.B. 1954, The George Washington University
Gantzler, Mary Lowell — D.C.
A.B. 1952, Dumbarton College
Gantz, Jerome Francis — D.C.
Gantz, Wilson — Md.
B.S. 1956, University of Maryland
Garafalo, Leo Jr. — Va.
Garafalo, Leo X. Patrick — Pa.
A.B. 1956, University of Scranton
Garan, Paul Vincent — N.Y.
Garber, Elizabeth Ferrell — N.C.
A.B. 1950, Duke University
Garbo, Peter Lowe — D.C.
Garcia, Gertrude Steele — Md.
A.B. 1953, Yankton College
A.M. 1954, The George Washington University
Garcia, Jack Moreno — D.C.
Garber, Paul Harvey, Jr. — Va.
A.B. 1952, University of Kentucky

Garbutt, Eugene James — D.C.
B.S. 1950, University of Wisconsin
Garcia, Carlos Armando — Texas
A.B. 1951, Texas University
A.M. 1954, Fordham University
Garcia, Carmen Pena — Md.
Garcia, Consuelo — D.C.
B.S. 1948, Juniata College
Garcia, Fernando — Va.
Garcia, Helena Saville — Panama
Garcia, Raymond — Md.
Garcia, Robert Courtney — Fla.
B.S. 1949, University of Florida
Gardner, Edson Rose — D.C.
A.B. 1945, University of California at Los Angeles
LL.B. 1948, LL.M. 1950, The George Washington University
Gardner, Leander Cecil, Jr. — Va.
Gardner, Leon Walter — D.C.
Gardner, Lyle James — Va.
Gardner, Mae D., Jr. — Md.
Gardner, Marshall Conson — Md.
B.S. 1943, M.S. 1950, The George Washington University
Gardner, Mary Elizabeth — N.C.
Gardner, Mary Elizabeth — D.C.
B.S. 1953, Mount Teachers College
Gardner, Thelma Elizabeth — D.C.
B.S. 1950, Morgan State College
Garland, Stanton, Jr. — Pa.
A.B. 1950, Harvard University
Garmon, Lamar Lenn — Va.
B.S. 1950, M.S. 1954, The George Washington University
Garnett, Donald William — D.C.
Garner, Charles Louis — Nev.
B.S. in E.E. 1946, University of New Hampshire
Garner, Esther Gee — D.C.
B.S. 1954, Howard University
Garner, Ethel Jean — Md.
Garner, Frances Lewis — D.C.
B.S. 1956, Mary Washington College
Garner, Paul Lawrence — D.C.
B.S. 1951, Hampton Institute
Garner, Paul Marvin — D.C.
Garner, Robert Wright — D.C.
Garner, Solomon S. J. — D.C.
Garner, Truman Coulter, Jr. — Texas
B.S. 1952, Tennessee Polytechnic Institute
Garnette, Lois — Ind.
A.B. 1951, Bates College
Garnett, Robert Harper — Pa.
Garnett, Lewis Fletcher — Va.
A.B. 1948, Coe College
Garnett, Marie Crutchfield — Va.
A.B. 1948, Hunter College
Garnett, Paul Woodfolk — Va.
A.B. 1949, The George Washington University
Garnett, Thelma Lavine — Mass.
B.S. 1954, Delta State Teachers College
Ed.M. 1955, Duke University
Garnett, William Clyde, Jr. — Calif.
Garnett, William Donaldson — D.C.
B.S. 1943, The George Washington University
Garrick, B. Lee — Va.
B.S. 1952, Brigham Young University

Garrigan, Daniel Paul — Va.
A.B. 1951, Drew University
Garris, Charles Taft — Va.
Garrison, Anne Elizabeth — D.C.
A.B. 1947, Oklahoma College for Women
A.M. 1955, The George Washington University
Garrison, Donald Carroll — D.C.
Garrison, Geraldine Ruth — D.C.
A.B. 1955, University of California
Garrison, Wendell Lloyd — Va.
Garro, Edward Joseph — Nev.
Gartner, Walter Bertram — D.C.
B.S. 1955, University of Maryland
Garton, Helen Woodrow — Va.
Garton, Louise Holcomb — Va.
Gartrell, Archibald, Jr — Md.
Garver, Carl Paul — Ill.
B.S. 1947, Northwestern University
M.I.A. 1947, Columbia University
Garvey, Sylvia Ruth — D.C.
Garvin, Edwin Smith — Md.
Garvin, Kenneth Alexander — Calif.
B.S. 1950, Texas Technological College
Gaskins, James — Va.
A.B. 1927, Lincoln University, Pennsylvania
A.M. 1940, Columbia University
Gaskins, Louise Sloan — Md.
Gaspard, Richard Joseph — Pa.
Gasque, Thomas Nelson — S.C.
A.B. 1946, LL.B. 1947, University of South Carolina
Gass, Edmund Cody — Tenn.
A.B. 1927, Carson-Newman College
A.M. 1931, University of Tennessee
Gassaway, Alexander Ramsey — D.C.
Gasser, Emmett Jack — Idaho
A.B. 1951, St. Mary's College of California
Gaston, Henry Felix — Md.
Gastonia, Bessie Allen — Md.
Gates, Edward Charles — Kans.
Gates, Herbert Stalwyn, Jr — D.C.
A.B. 1951, Drake University
Gates, Mary Jane — Md.
Gatewood, Edward Lamar — D.C.
Gatlin, James Paul — Va.
Gatlin, William Hebert — D.C.
B.S. 1951, Southwest Missouri State Teachers College
Gaudin, Anthony Carl — N.Y.
B.S. 1951, University of Wisconsin
Gaudreau, Sandra K. — Md.
Gaudy, Charles Richard — D.C.
B.S. 1951, Waynesburg College
Gauthier, Mary Jane — Conn.
A.B. 1951, University of Connecticut
Gautier, Julia Thurston — Md.
B.S. 1951, Fordham University
Gauvain, Edwards Emilie — Va.
A.B. 1950, Maryland College
Gavenman, Robert Lewis — Md.
Gavenman, William Edward — N.Y.
Gavenski, Thelma Elaine — Pa.
Gawler, Cecil Allen — D.C.
Gay, Richard Archer — Wash.
Gayle, Burton Brown — Md.
A.B. 1950, A.M. 1951, University of Rochester
Gaylord, W. Timothy — Mich.

Gaynor, James Kenneth — Ind.
B.S. 1946, J.D. 1950, Indiana University
LL.M. 1951, The George Washington University — D.C.
Gaynor, Nathan
B.S. 1949, Roosevelt College
M.S. 1951, Bradley University — Va.
Gearhart, Sally Ann — Va.
Geary, Daniel Joseph — Fla.
Geathers, Elmer Dean — Nev.
Gebhards, Augusta Marie
A.B. 1938, Nebraska State Teachers College, Kearney — Va.
Geddes, Jean Ruth — S.C.
Gee, M. Gwendolyn — D.C.
Geer, Edwin Hayvette
A.B. 1950, Vassar College
Ph.D. 1955, State University of Iowa — D.C.
Geer, Helen Fern — D.C.
Geerhart, Constance Vivienne
A.B. 1952, Cornell University — D.C.
Geerhart, Donald William
A.B. 1949, LL.B. 1951, Cornell University — Ga.
Geesling, Kenneth L. — Md.
Gehringer, Edward Charles — Md.
Geiermann, Barbara Ann — Md.
Geiger, Felix Eugene, Jr
B.S. 1941, Ph.D. 1955, University of Wisconsin — Wis.
Geiger, Herbert George — D.C.
Geigle, Herbert
A.B. 1951, University of South Dakota — Md.
Geiger, Jesse Edward — D.C.
Geikler, Paul
A.B. 1948, A.M. 1949, The George Washington University — Mich.
Geiler, Henry
B.S. 1943, University of Michigan
J.D. 1949, Northwestern University — Va.
Geiler, Lily Lorenz
A.B. 1934, The George Washington University — D.C.
Geiler, Sidney B. — Va.
Geiwicks, Harold Galt — N.Y.
A.B. 1932, College of Wooster
Geisselman, Irving — Va.
B.S. in M.E. 1950, University of Buffalo
Geissinger, Kathryn Francis — Ohio
B.S. 1950, Mary Washington College — Md.
Geissler, Henry King
Geistweit, Walter Andrew — Md.
A.B. 1951, A.M. 1952, The George Washington University — Va.
Geiszler, Isabel Linde
Gaston, Joseph Wesley — D.C.
A.B. 1932, University of North Carolina — Md.
Gelat, Marguerite Elizabeth — D.C.
Gelbach, William Edwin Davis — D.C.
Gelenitsas, Nicholas Chris — Kans.
Gelinas, Armand — Va.
George, Charles Richard
George, Dorothy Mae — Va.
B.S. 1945, Stephen F. Austin State Teachers College — D.C.
George, Helen Love — Md.
George, Henry Lewis
George, James Francis
B.C.E. 1951, University of Illinois

George, Lynn Darcy — Va.
A.B. 1953, The George Washington University
George, Marshall Eugene — Texas
George, Myron Don — Kans.
George, William Mason — Md.
A.B. 1950, A.M. 1951, University of Maryland
Georgiades, Zenon Efthymiov — D.C.
Gephart, James Alan — Ill.
B.S. in C.E. 1955, Northwestern University
Gerace, Nicholas George — D.C.
Georgiou, Platon Leonidas — D.C.
B.S. 1952, University of Maryland
Geraci, Stephen — D.C.
Gerdes, Nora John — Md.
Gerard, Vergil Lee — Va.
B.S. in E.E. 1948, University of Cincinnati
Gerber, Lloyd Samuel — Mich.
A.B. 1951, J.D. 1953, University of Michigan
LL.M. 1955, The George Washington University
Gerber, Lloyd M. — Utah
B.S. 1951, Brigham Young University
Gerber, Roger Haviland — Md.
Gerhard, Edmund James — Va.
A.B. 1950, The George Washington University
Gerhold, William Franklin — D.C.
Gerig, Judith Sebastian — D.C.
A.B. 1952, Harvard University
Gerlach, Elmer Kenneth — Va.
Germer, Robert Lee — Md.
B.S. in Ed. 1951, University of Maryland
Gerra, Martin Jerome, Jr. — Md.
B.S. in F.S. 1949, Georgetown University
A.M. 1954, Catholic University of America
Gerson, Earle J. — D.C.
A.B. 1951, Suffolk University
A.M. 1954, Florida State University
Gerver, Robert Frederick — D.C.
Gerzer, Barbara Helene — D.C.
Gessler, Thomas Elliott — D.C.
Gessner, Albert Edward — Md.
Gessner, John Rudolph — Va.
Getchell, Martha Lord — N.Y.
Getzoff, Herbert — N.Y.
B.S. 1954, College of the City of New York
Ghergulescu, Raoul — Va.
LL.B. 1942, Bucharest University
LL.D. 1950, Ph.D. 1951, University of Paris
Giannotti, Catherine Verne — Hawaii
A.B. 1951, Mills College
Giannotta, James Richard — Pa.
Giannotta, Paul — Pa.
B.S. in Phar. 1953, University of Pittsburgh
Giannotti, Peter — N.Y.
Gianoutsos, William — N.Y.
Gibb, Frederick William II — Va.
Gibbons, Raymond Jourdan — Ariz.
A.B. 1952, Stanford University
Gibbons, Delmar Johnson — Utah
Gibbons, Florence Katherine — Conn.
Gibbons, Maybelle Elizabeth — Md.
B.S. 1955, The George Washington University
Gibbons, Richard Miller — D.C.
Gibbs, Esther Dozier — Mont.
Gibbs, Julian Greenwood, Jr. — Md.
B.S. 1953, The George Washington University
Giberson, Howard Samuel — Va.
A.B. 1941, Harvard University
Gibert, Anne Juliet — Va.
Gibson, Anna Love — D.C.
B.S. 1928, Wilberforce University
A.M. 1954, New York University
Gibson, Earl Doyle — D.C.
B.S. in E.E., Oklahoma Agricultural and Mechanical College
Gibson, Edwin Eastburn — S.C.
C.E. 1911, Rensselaer Polytechnic Institute
Gibson, Elizabeth Rebecca — D.C.
Gibson, Elsie Ross — Va.
A.B. 1914, Richmond Professional Institute
Gibson, Reginald M. E. — Md.
Gardner, Susan Ramsay — D.C.
Gardner, Richard Porter — Ohio
Gibson, Donald Anthony — Va.
B.E.E. 1952, Marquette University
Gieseking, Philip Matthiessen — D.C.
Gilday, Dolores — Md.
B.S. in F.S. 1947, Georgetown University
Gilbert, Alton Everett — Maine
B.S. 1950, B.S. 1951, University of Maine
Gilbert, B. LeRoy — Md.
B.S. in F.S. 1951, Georgetown University
Gilbert, Ely M. — N.Y.
Gilbert, Stanley Armand — D.C.
Gilchrist, Janet — Md.
A.B. 1954, Hollins College
Gild, Bernard S. — Pa.
Gildenhorn, Herbert Joseph — D.C.
Gildenhorn, Leonard Sophie — D.C.
Gildersleeve, James McOlaster, Jr. — Va.
Gilford, John Valentine — Md.
A.B. 1949, American International College
Gilkey, Eunice Yost — Va.
Gilkerson, Wayne Ritter — Va.
Gill, Dudley Wilfred — N.J.
Gill, Thomas William — Va.
Gillespie, Jean — Conn.
A.B. 1935, Mount Holyoke College
A.M. 1944, Fletcher School of Law and Diplomacy
Gillette, Helen Elizabeth — D.C.
Gilley, Leonard Bingham — Maine
A.B. 1951, Bowdoin College
Gilliam, Armistead Williams, Jr. — D.C.
A.B. 1952, University of Virginia
Gilliam, Basil Hollins — Va.
Gilliam, Carroll Lewis — S.C.
A.B. 1949, A.M. 1950, University of South Carolina
Gilliam, Jack Edward — D.C.
A.B. 1948, Iowa State Teachers College
A.M. 1951, The George Washington University

Gilliland, Alexis Arnaldus — Ind.
B.S. 1951, Purdue University
Gillis, Marcus Ronald — D.C.
A.B. 1953, Humboldt State College
Gilliam, Frederick Easton — Va.
Gilman, Constance — D.C.
A.B. 1954, University of Massachusetts
Gilman, Harriet K. — Va.
B.S. 1944, University of Massachusetts
Gilmartin, Eugene Richard, Jr. — Va
Gilroy, Paul Joseph — Md
Gilson, John Aloysius, Jr. — Md.
Gilwee, William James, Jr. — Va.
B.S. 1951, Rockhurst College
Gingery, C. Arden — Calif.
A.B. 1928, University of California at Los Angeles
LL.B. 1931, University of Southern California
LL.M. 1953, Georgetown University
Ginley, Eileen Marie — Va.
Ginn, John Allen — Md.
B.S. 1953, University of Maryland
Ginsburg, Martin Alan — N.J.
A.B. 1955, Lehigh University
Ginsburg, Sheila Rhea Herman — N.Y.
Gisser, Roll Duff — Kans.
B.S. in Aero.Eng. 1948, University of Kansas
Giokaris, James Daniel — Mo.
Gionet, Charles Edward — Va.
Giordano, Frank Michael — D.C.
Gipe, Richard Lee — D.C.
B.S. 1951, American University
Gipple, Jim William — Wash.
A.B. 1954, The George Washington University
Girardin, Muriel Claire — Va.
Girton, Gloria — D.C.
Giss, Beverlie Anne — D.C.
Gitlin, H. Joseph — Ill.
Gittins, Adelaide Howser — Va.
B.S. 1937, Madison College
Gladden, Robert Thomas — D.C.
A.B. 1949, A.M. 1950, University of Rochester
Glabere, Richard Robert — N.Y.
B.S. 1955, St. John's University (N.Y.)
Gladden, James Wilson — Va.
Gladwin, Richard Charles — Va.
Gladwell, Arthur Alfred — N.Y.
Glann, Mary Ann — D.C.
Glasener, Philip Judson — Va.
Glaser, Marilyn — Va.
Glaser, Solomon — N.Y.
B.S. 1950, Long Island University
Glasper, Anna Adele — Va.
Glass, Eileen F. — Va.
Glass, Norman Palmer — D.C.
A.B. 1937, Oklahoma City University
LL.B. 1941, Oklahoma University
LL.M. 1950, The George Washington University
Glassburn, Ann Moore — D.C.
A.B. 1934, Vassar College
Glassburn, Constance Ann — Canal Zone
Glassman, Dora — D.C.
Glassman, Gerald John — Md.
A.B. 1950, The George Washington University
Glassman, Leonard Herbert — N.
B.S. 1955, Franklin and Marshall College
Glawcke, Harold Gunther — N.
Glaser, Arne Andrea — M.
Glazier, Edward Harvey — N.
B.S. 1952, Wheaton College
Gleason, Bonnie Lee — Ohio
Gleason, Edmund Hall — Va.
B.S. 1949, University of Oklahoma
Gleason, Francis Joseph — D.C.
Gleason, Frederick James, Jr. — Md.
B.S. 1952, The George Washington University
Gleason, James Patrick — Md.
B.S. 1948, LL.B. 1954, Georgetown University
Gleason, Mary Jacqueline — D.C.
A.B. 1947, Trinity College
A.M. 1951, Catholic University of America
Gleeson, Harry Hunt — Md.
Glen, William — N.Y.
B.S. 1953, Brooklyn College
Glendenning, Davis Tuttle — Pa.
Glenn, Dorothy May — Va.
Glenn, James Hartman — D.C.
A.B. 1944, Duke University
Glenn, Ralph Ray — N.C.
A.B. 1947, University of North Carolina
Glettler, Bernard Urbam — Md.
Glickert, Peter Joseph — N.J.
B.S. in Ed. 1949, Fordham University
Glickson, Solomon Platt — N.
Glines, Robert Edward — Va.
Glover, Betty F. — S.C.
Glover, Katharine Williams — D.C.
A.B. 1953, Brown University
Glukenhous, Frances Shear — D.C.
A.B. 1931, Hunter College
Gluscevich, Lincoln Ivan — Va.
Glynn, Paul Joseph — D.C.
A.B. 1948, St. Thomas College
B.S.L. 1951, University of Minnesota
Guerra, Mark Lawrence — D.C.
A.B. 1948, St. Mary's University
Gnotta, Angela Fern — Md.
Goaz, Harry Phillip — N.Y.
Goben, Kenneth William — Md.
Gobetz, Harvey — Va.
A.B. 1955, Harpur College
Gochenour, Marian Elizabeth — D.C.
Goddard, William — D.C.
B.S. 1949, College of the City of New York
Godwin, Lenetta — N.C.
Godwin, William Holloway — W.
Goebel, Joan Mae — Md.
Goedeke, Milton Thomas — D.C.
B.S. 1941, University of Maryland
M.Ed. 1949, Johns Hopkins University
Goeltom, Filipina — Pa.
Golez, Lenin Paul III — D.C.
A.B. 1950, La Salle College
B.S. in F.S. 1951, Georgetown University
Goemaat, Edward John — Va.
A.B. 1951, The George Washington University
Goertemiller, Clarence Christian, Jr. — D.C.

Goetz, George Edward Va
A.B. 1952, Long Island University
Goff, Charles Clifford Va.
A.B. 1958, West Virginia University
Golden, George Milton, Jr. Md.
Gomez, William D.C.
Gomez, William Morgan D.C.
Gold, Benjamin Arthur D.C.
Gold, Benjamin Harrison D.C.
B.S. 1934, Buffalo State Teachers College
A.M. 1935, Columbia University
Gold, Lewis Lester Md.
B.S. 1949, University of Maryland
Gold, Lewis
Goldberg, Aaron Md.
A.B. 1950, Brooklyn College N.Y.
M.S. 1954, DePaul University
Goldberg, Bernard
Goldberg, Dora Labson D.C.
B.S. 1941, Western Reserve University D.C.
Goldberg, Edna Parker
A.B. 1953, University of Arizona D.C.
Goldberg, H. F.
B.S. 1954, University of Maryland D.C.
Goldberg, Manuel Lewis
Goldberg, Ronald Sanford D.C.
B.S. 1955, University of Maryland D.C.
Goldberg, Sheila
Goldberg, David D.C.
Golden, Mary Lincoln Calif.
B.S. 1951, Tusculum College N.Y.
Goldenberg, Jerome Albert
Goldenberg, Marvin Arthur Md.
A.B. 1951, B.E.E. 1952, Pennsylvania State University Md.
Goldenthal, Edwin Ira
B.S. 1952, M.S. 1954, The George Washington University Md.
Goldfarb, Jacob Victor
B.S. 1939, A.M. 1940, Boston University D.C.
Goldfarb, Harold Frederick
B.S. 1951, University of Richmond D.C.
Goldfarb, Caroline Mary
A.B. 1950, Iowa State Teachers College Iowa
Goldman, Howard Allen
Goldman, Verna Md.
Goldsborough, Sarah M. F. D.C.
A.B. 1943, Smith College D.C.
Goldsmith, George Kay
B.S. 1954, Wayne Teachers College D.C.
Goldsmith, Hilda Stanley
Goldsmith, Robert Harold D.C.
Goldsmith, Frances Zelda D.C.
Goldstein, Irving Leo Md.
A.B. 1950, University of California at Los Angeles Calif.
B.L.S. 1951, University of California
Goldstein, Leon
Goldstein, Leon George D.C.
A.B. 1946, A.M. 1949, University of Maryland Md.
Goldstein, Norman
Goldstein, Samuel Murray D.C.
B.S. in Eng. 1951, Ohio State University D.C.
Goldstein, Sophia Evelyn
Goldstein-Cooke, Sister Mary Sylvia D.C.
A.B. 1938, Catholic University of America D.C.
A.M. 1955, Villanova University
Goll, Joseph Francis
Goll, Christian, John
B.S. 1941, Rutgers University Va.
Va.

Gombert, Joanne Emily Ohio
Gomez, Stella Va.
Gomez, Agosta Hector Anacleto Colombia
Gomez, Laura Severina D.C.
A.B. 1953, Smith College
A.M. 1954, Yale University
Gonellas, Bernard N.Y.
Gonsalves, Donald John Md.
B.S. in C.E. 1953, University of Maryland
Gonzaga, Raymundo Pompeu Magalhaes Md.
Good, Dean Kemple Pa.
Good, George Morton Fla.
A.B. 1951, Emory University
Good, Shirley Estelle Md.
Goodall, David Lee Va.
Goodchild, Robert Marsden Va.
A.B. 1948, Rutgers University
Goodeyune, Billy Bentley D.C.
Goodman, David Lewis Texas
Goodman, Donald Elliott D.C.
Goodman, James Francis Mo.
Goodman, John Lee Colo.
Goodman, Lucas Morton D.C.
Goodman, Richard Stuart Wis.
B.S. 1951, M.D. 1954, University of Washington
Goodman, Robert Stanley D.C.
Goodnight, James Arvel Va.
Goodnow, Mary Anne D.C.
Goodrich, Bernard Arthur D.C.
Goodrum, Elmer George Md.
B.S. in M.E. 1952, University of Maryland
Goodrich, Roger Searcy Va.
Goodsell, Neil Weller Va.
A.B. 1954, The George Washington University
Goodson, Richard Carlyle Md.
Goodwin, Melvin Gerald Ohio
A.B. 1951, University of North Carolina
Goodwin, Donald Coolidge Md.
A.B. 1950, Duke University
Goodwin, Donald Rankin N.C.
Goodwin, Eugene Hartman Va.
A.B. 1952, Davidson University
Goodwin, Paul Russell Md.
B.S. 1951, University of Maine
Goodwin, Robert William Va.
Goodwin, William Lewis D.C.
LL.B. 1952, Baylor University
Goodwyn, Floyd Everett Md.
Gorgas, Walter Evans Md.
A.B. 1954, The George Washington University
Gorgone, Rolf Fabian Va.
B.S. in A.E. 1949, University of Washington
Gorman, Stanley Joseph N.Y.
Gorsuch, Emily M. Va.
B.S. 1950, Washington State Teachers College
Gorski, George, Jr. Pa.
A.B. 1949, University of Iowa
Gortner, Albert Va.
B.M.E. 1944, College of the City of New York
Gorton, Alexander Rola D.C.
Gorton, Arthur Lane D.C.
Gorton, Clifford Mark D.C.
B.S. 1951, Boston College
A.M. 1954, Wesleyan University
Gordon, David McCall D.C.

Gordon, Elmo Addison D.C.
Gordon, Gerald Vincent D.C.
Gordon, Harriett Rawls Va.
A.B. 1921, Earlham College
Gordon, Harry Carl Pa.
Gordon, Helena Elizabeth D.C.
Gordon, Hugh Lee Va.
B.S. in E.E. 1952, University of Maryland
Gordon, Ina Carole D.C.
Gordon, John Willard Ga.
Gordon, Lenore Ludeligh D.C.
Gordon, Marguerite Valborg Australia
Gordon, Morton Md.
Gordon, Paul D.C.
Gordon, William A Va.
A.B. 1953, Howard University
Gore, John William Va.
A.B. 1947, Shepherd State College
A.M. 1950, The George Washington University
Gorecki, Stanley Paul Va.
Goren, Arthur Eugene Md.
Gorham, Alan Edward N.Y.
B.S. 1010, College of the City of New York
A.M. 1048, M.B.A. 1954, New York University
Gorman, Charles Monte D.C.
Gorman, Thomas Dumont Md.
Gormley, William Paul Calif.
A.B. 1949, San Jose State College
A.M. 1951, University of Southern California
Ph.D. 1052, University of Denver
Goroshkoth, Maude Ballard Va.
Gorski, Regina Stella D.C.
Goshorn, Elmer Ellsworth Ill.
B.S. in M.E. 1056, Northwestern University
Goslee, Eugene George Minn.
A.B. 1040, A.M. 1053, American International College
Goto, John Mitsuo Md.
Gott, Charles Morris D.C.
Gott, Richard Frommeyer Md.
B.S. in M.E. 1040, University of Maryland
Gottholm, James Albert D.C.
Gottlieb, Wynona June Colo.
Gottschalk, Charles Max Md.
B.E.S. 1050, Penn College
Gough, Stuart Allan N.J.
Gould, Warren Va.
A.B. 1051, The George Washington University
Gould, William Samuel D.C.
Goure, James V. Va.
B.S. 1046, U.S. Naval Academy
Gouveia, James Mass.
Gower, Karl K. D.C.
Grace, John Perry Va.
Grabeel, Gene Md.
B.S. 1041, Longwood College
Grabowski, Alice Jane D.C.
Grabowski, John S. Vt.
B.S. 1050, St. Michael College
Gracias, Denis Frank D.C.
Grady, Joseph William Md.
B.S. Engr. 1054, The George Washington University
Graef, Evelyn Bertha D.C.
Graeff, Lelia A Me.
A.B. 1934, University of Kansas
A.M. 1040, Columbia University
Graettinger, Paul Harold Me.
Graf, Virginia Louise
A.B. 1054, The George Washington University D.C.
Gragan, Philip Arthur
A.B. 1051, The George Washington University Ill.
Graham, Aaron Lee
B.S. 1052, D.V.M. 1054, University of Illinois Iowa
Graham, Charles Okke
A.B. 1053, Texas Christian University Md.
Graham, Frances Allegra
B.F.A. 1027, University of Nebraska D.C.
Graham, Geraldine Agnes Mass.
Graham, John William
B.S. 1054, Massachusetts Institute of Technology Wash.
Graham, Kenneth Donald, Jr.
B.S. 1052, University of Washington Va.
Graham, Lonnie Eleanor
B.S. 1027, Cornell University
M.B.A. 1045, Stanford University Ohio
Graham, Sonora L. Ohio
Graham, William Hugh
B.S. 1042, Howard University D.C.
Grandy, Patricia Anne Mont.
Graneth, Marvin Oliver
A.B. 1052, Gustavus Adolphus College
LL.B. 1055, University of Minnesota Me.
Granger, Stephen Leonard
A.B. 1052, Amherst College D.C.
Grant, Howard Dyckman, Jr.
A.B. 1050, University of Massachusetts
A.M. 1054, Boston University D.C.
Grant, Mary Ellen
A.B. 1051, The George Washington University Va.
Grant, Regina Anne D.C.
Grant, Stuart Charles N.Y.
Grant, William Arthur
B.S. 1048, University of Pennsylvania
A.M. 1049, Columbia University D.C.
Granville, William Joseph Owen
B.S. 1046, A.B. 1053, St. Francis Xavier University D.C.
Grazzini, Nino Angelo Calif.
Greaham, Dominica Mae Ill.
Grace, Joseph John
B.S. in M.E. 1055, University of Illinois Phil. Pa.
Grau, John William Va.
Grausgaard, John Vincent Md.
Gravatt, Walter Bernard
B.S. in M.E. 1041, New York University D.C.
Graves, Benny Bibb Va.
Graves, Donald Bernard Ind.
Graves, Joseph Boyd Va.
Graves, Robert Lee Mich.
Graves, Roger Lewis D.C.
Graves, Edward Schill D.C.
Gray, Alice Agatha
Gray, Beatrice Mason Calif.
A.B. 1042, University of Michigan
Gray, Charles Hobson
B.S. 1043, M.D. 1047, Stanford University Me.
Gray, Damon Charles

Gray, Eugene Paul — D.C.
Gray, Paul Randolph — Va.
Gray, James Russell — D.C.
Gray, Joyce Marie — D.C.
Gray, J. Rose D. — Fla.
Gray, Patricia Carlin — Va.
Gray, Paula Jane — Va.
Gray, Ralph Richard — Utah
A.B. [illegible] University of Utah
Gray, Robert Alva, Jr. — Pa.
Gray, Rose A. F. — D.C.
A.B. [illegible] Liberia College
Gray, Thomas Rolland — D.C.
Grayson, Samantha — D.C.
Grear, Lena Elouise — Md.
Greenlee, Albert Tom — Md.
A.B. [illegible] St. Augustine's College
Greene, Thomas Francis — Va.
A.B. [illegible] Occidental College
Greeb, Sallie — Pa.
Greenberg, Joseph Anthony — D.C.
Greene, Dorothy Josephine — D.C.
B.S. [illegible] Elizabeth Smith College
Greene, Eugene Duncan, Jr. — Va.
Greene, Gerald — Va.
Greene, Glenn Gail — Va.
Greene, Harold Charles — Md.
Greene, Lois Allen — Md.
Greene, Lottie Lafleter — N.J.
B.S. [illegible] U.S. Military Academy
B.S. [illegible] M.E. [illegible] University of California
Greene, Lawrence Benton — Va.
B.S. [illegible] U.S. Naval Academy
Greene, Marion Ethel — Va.
Greene, Marjorie — Ohio
B.S. [illegible] Westerbeke College
Greene, Nameless — N.Y.
Greene, Norman Morgan — D.C.
Greene, Paul Hamilton — Va.
B.S. [illegible] University of Illinois
Greene, Robert Patrick — Md.
Greene, Thomas Edward — Va.
Greene, William Clark — Va.
Greenberg, Daniel — D.C.
Greenhow, Matilda Sandra — D.C.
Greenia, Arthur Leonard — Ohio
Greenia, Caroline Brandon — Va.
Greene, Dixie Jan — D.C.
Greenia, Lorenzo G. — Va.
Greenia, Florence Bland — Va.
Greenia, Jane Ellen — Md.
Greenia, Katherine Virginia — Va.
A.B. [illegible] Hampton Normal College
A.M. [illegible] M.D. [illegible] The George Washington University
Greenia, Lenora Herring
Greenia, Marion Dixon — Md.
B.E.E. [illegible] Georgia Institute of Technology — Va.
Greenia, Roosevelt Brown, Jr.
Greenia, Vaughan Bryant — D.C.
A.B. [illegible] The George Washington University — Va.
Greenia, Walter Scott
B.S. [illegible] Shaw University — Va.
M.S. [illegible] The George Washington University
Greenfield, Albert Aaron — D.C.
Greenfield, Julius William — N.Y.

Greenhalgh, Frederic — Md.
A.B. 1947, Harvard University
A.M. 1950, The George Washington University
Greenhouse, Samuel W. — Md.
B.S. 1928, College of the City of New York
A.M. 1934, The George Washington University
Greenspun, Frank Rolland — D.C.
Greenspun, Irving Leonard — Va.
B.S. 1951, University of North Carolina
Greenstein, Bertha Seymour — N.Y.
A.B. 1936, A.M. 1943, University of Buffalo
Greenwald, Marilyn Frances — D.C.
Greenway, Sidney Alfred — D.C.
Greenwood, Jane Carolyn — D.C.
Green, Earl Maxwell, Jr. — Va.
B.S. 1943, U.S. Naval Academy
Greer, Eleanor Jackson — D.C.
A.B. [illegible] Wellesley College
Greer, Elsie Mabel — N.Y.
Greer, J. Walter — Va.
B.S. in E.E. 1929, University of Notre Dame
Greer, Marilyn Louise — Va.
Greer, Thomas Jefferson, Jr. — D.C.
B.S. in Engr. 1952, LL.B. 1954, The George Washington University
Greever, Earl Brad — Va.
B.S. in M.E. 1947, Virginia Polytechnic Institute
Greever, William Randolph — W.Va.
B.S. 1924, A.B. [illegible] Morris Harvey College
Gregware, Gwendolyn Hazelwood — Va.
A.B. 1947, Smith College
Gregware, Leonard Harry — Iowa
A.B. [illegible], State College of Washington
Gregware, Florence Isabel — D.C.
A.B. [illegible] The George Washington University
A.M. [illegible] University of Maryland
Gregory, Frances Avery — Ohio
Gregory, Hilda Jane — D.C.
Gregory, Ivan Mayo — D.C.
B.S. [illegible] Miner Teachers College
Gresham, Caroline Margaret — D.C.
B.S. [illegible], Columbia University
Gresnick, Clarence Joseph — Va.
Greenhaw, Leonard Russell, Jr. — Va.
Greenhaw, Ruth Lawrence — Md.
Greenlaw, Hamilton Judkins — Va.
B.A. [illegible] Howard University
Greenlee, Emerson Nelson — Md.
A.B. [illegible] Cornell University
A.M. [illegible] Columbia University
Greenlee, Thomas Neill Fuller — Md.
A.B. [illegible] The University of the South
A.M. [illegible] Ph.D. [illegible] University of Mississippi
Greer, William Lindsey — D.C.
Greeson, Gary Glen — Ill.
Gregg, Benjamin Franklin — Va.
B.E.E. [illegible], University of Virginia
Gregg, Charles Nancy, Jr. — D.C.
Gregg, Ellen — Md.
Gregg, Jacqueline H. — Va.
Gregg, James Farnsworth — Mass.
Gregg, Linden Lavon — Va.
B.E.E. [illegible] The George Washington University

Griffin, Maurice Edwin, Jr. D.C.
Griffin, Patricia Ruth D.C.
B.S. in Ed. 1948, University of Dayton
Griffin, Robert Francis Md.
Griffin, Robert Julian Ga.
Griffin, William Joseph Va.
A.B. 1954, The George Washington University
Griffing, Joel Daniel Va.
Griffing, Willard Earl Va.
A.B. 1953, The George Washington University
Griffith, Annie Page Va.
Griffith, Clyde Lamont Va.
B.S. 1937, LL.B. 1941, Boston University
LL.M. 1955, The George Washington University
Griffith, Ina Jo Va.
B.S. 1931, Murray State College
Griffith, Lera Evelyn Va
A.B. in Ed. 1952, The George Washington University
Griffith, Thomas Vincent D.C.
Griffiths, James Paul Md.
Grigorian, Haikaz Marturos Iran
A.B. 1952, Boston University
M.S. in P.H. 1953, Columbia University
Grille, Virginia Mae Va.
Grimes, Martha Md.
A.B. 1954, A.M. 1955, University of Maryland
Grimes, William Dunnington Md
A.B. 1952, St. Johns College
Grimley, John Joseph Md.
B.S. 1950, Fordham University
Grimm, Eugene Leslie Md
B.S.L. 1948, LL.B. 1950, University of Minnesota
Grimm, Glenn Edward Va
Grimm, Janet Joyce D.C.
A.B. 1951, Western Reserve University
Grimm, Rhea Elma Va.
Grimmett, Edwin John Wash.
Grimsley, Ludlow Leonidas Va.
Grindstaff, Ethel Marguerite Colo.
Grinnell, Lyman William Md.
B.S. in E.E. 1955, Duke University
Grisso, Leonard D.C.
Grisso, Victor Edward D.C.
B.S. 1951, The George Washington University
Groesbeck, Louis Maurice Md
A.B. 1953, Bucknell University
Groesbeck, Ralph Edward D.C.
A.B. 1949, The George Washington University
Groesbeck, Theodore Roger D.C.
A.B. 1950, The George Washington University
Groff, Dillet Burr III D.C.
Groom, Phyllis Pearl D.C.
B.S. 1948, Miami University
Gross, Howard Robert Va.
A.B. 1943, University of Washington
Gross, Robert Thomas N.Y.
Gross, Robert Victor D.C.
A.B. 1942, University of Tampa
A.M. 1953, The George Washington University
Grossman, Harvey Leonard Md.
B.S. in M.E. 1951, University of Rhode Island
Grossman, Marcia Ruth D.C.
Grossman, Phillip Va
B.S. 1954, New York University
Grossman, Phyllis D.C.
Grossman, Richard Erwin Md.
B.S. in M.E. 1953, University of Rhode Island
Grossman, Rochelle D.C.
Grosz, Waneta Dakota D.C.
Groth, Irmgard Pa.
Grove, Bruce Alexander, Jr. Va.
Grove, Vera McMurray D.C.
Groves, Barbara Jean Colombia
Grow, Reesa Md.
Grubbs, Doris McCreary Ind.
Grubb, Edward George
B.S. 1949, M.S. 1951, Purdue University
Dr. en Droit 1953, University of Lyons
LL.B. 1954, The George Washington University Ind.
Gruss, Rosemary Nottingham
B.S. 1947, Purdue University D.C.
Grunewell, Jane Elizabeth Calif.
Grunver, Gene Scott D.C.
Grover, Mildred Miller D.C.
Grover, Richard Ralph Md.
Gruver, William John
B.S. 1929, Pennsylvania State University
Ed.M. 1951, The George Washington University D.C.
Gruz, Reinaldo Francisco Pa.
Gruzalski, Eugene Michael D.C.
Guarnaccia, Jeannette Josephine Va.
Gubser, Dorothy Dalrymple Va.
Guckenberg, Eugene M.
B.S. 1951, LL.B. 1955, University of Minnesota Md.
Gude, Gilbert D.C.
B.S. 1948, Cornell University
Gudin, Levkovich, Catherine D.C.
Gudin, Levkovich, Maryan Va.
Gudis, Michael Lawrence W.
Guel, Lopez, James Va.
Guerrero, Inez Josephine
B.S. 1951, Milton College Philippines
Guerrero, Alicia M.
A.B. 1932, University of the Philippines Pa.
Guest, Lillian D.C.
Guevara, Santiago Garcia D.C.
B.S. 1923, U.S. Military Academy
Guggenheim, Marjorie Gibson N.Y.
A.B. 1954, The George Washington University
Guglielmo, Paul Francesco
B.C.E. 1951, College of the City of New York D.C.
Guidoni, Natalie DeLage Fla.
Guier, Debbie Ruth D.C.
Guillaume, Bernard Joseph Va.
Guimond, Norman William D.C.
B.S. 1951, Boston College
Guither, William Daniel India
M.E. 1950, Purdue University
Gulhati, Ravi Inder India
A.M. 1953, University of New Delhi Va.
Gulick, Vijaya Laxmi Va.
Gull, Edward Nolan D.C.
Gumm, William Clarence, Jr. Va.
Gump, Nettie Jean Iowa
Gunz, Dennis Mott
B.S. 1923, U.S. Military Academy
LL.B. 1932, Yale University

Gurevich, Joan Sirota
Md.
Gurin, Jacob
D.C.
B.S. in Ed. 1941, College of the City of New York
Gurney, Harry C., Jr.
Ohio
Gustafson, Charlotte Matilda
D.C.
Gustafson, Robert Eugene
Md.
B.S. 1949, Northwestern University
Gutermuth, Shirley Herwick
Pa.
Gutlery, Upton Keller
D.C.
A.B. 1952, The George Washington University
Guthrie, Carol Eleanor
Md.
Gutierrez, Donna Marie
Va.
Gutierrez, Louis Thomas
Pa.
A.B. 1951, M.S. 1952, Pennsylvania State University
Gutshall, Robert Lee
W. Va.
Gutierrez, Rafael Inocencio
D.C.
Guttmacher, Richard Winfield
Va.
Guttmacher, Richard M.
Md.
Guttmacher, Judge, Barbara
D.C.
Guy, Donald Martin
D.C.
Guy, John Andrew
Md.
A.B. 1928, A.M. 1930, Columbia University
J.D. 1931, New York University
Guy, William Henry
Md.
A.B. 1947, Northwestern University
A.M. 1948, Boston University
Guzman, Rey
Gwaltney, Jeanne O.
Ill.
Gwynne, John Williams, Jr.
Va.
Iowa
A.B. 1954, State University of Iowa

H

Haas, Betty Ann
Haase, Heera
Md.
Hagee, Walter W.
Va.
B.E.E. 1952, Marquette University
Va.
Hahb, Awf
Iraq
Lawyer, 1948, Higher Teachers Training School, Baghdad, Iraq
Haleb, Joseph Albert, Jr.
N.C.
B.S. 1954, University of Arizona
D.C.
Hallgren, Michael Markar
B.S. 1953, University of Michigan
Mich.
Hacker, Richard Bruce
Md.
B.S. in Ed. 1949, Pennsylvania State Teachers College, Millersville
Hackett, Louis Jane
Hadad, Alfred John
D.C.
Haddad, John Kenneth
D.C.
A.B. 1951, Cornell University
N.Y.
M.S. 1955, University of North Carolina
Haddad, Roberts Paul
Hadson, Dorcas Deryl
Mass.
Hadley, Hewitt, Nixon
Va.
A.B. 1949, Wingman College
Md.
Hadley, Robert Purnell
A.B. 1952, Oregon State College
Va.
Haeb, Richard Alan
Hafer, Mary Stewart
D.C.
A.B. 1945, Swarthmore College
N.Y.
Haffner, Ralph A.
Haft, Stanley Herbert
Md.
Hagar, Leo Samuel
D.C.
Hagenbucher, Jerry Thomas
Texas
B.S. 1950, Philadelphia College of Pharmacy
N.J.
Hager, George Frederick
Md.

Hagerling, Ruth Eleanor
Va.
B.S. 1950, Nebraska Wesleyan University
Haggart, Ronald D.
D.C.
Haggerty, Robert
N.Y.
B.M.E.S. 1954, University of Maryland
Hahn, Carol E.
Ill.
A.B. 1954, Macalester College
Hahn, Daniel Boston
Va.
A.B. 1953, The George Washington University
Hahn, William Robert, Jr.
Va.
Haines, Frances Martin
Md.
Haines, Johnathan Augustus, Jr.
Va.
Hairston, Delores Lindsay
D.C.
Hajdasek, Maynard Kenton
N.C.
B.S. in P.E. 1949, A.M. in Ed. 1952, The George Washington University
Haldane, John Thomas
Md.
B.S. 1953, University of Maryland
Hale, Harvey Robert
N.Y.
A.B. 1951, State University of Iowa
Hale, Jeanne Dempsey
Md.
A.B. 1953, Northeastern University
Hale, Lester Turner
Md.
Haley, Jerry Brown, Largent
Va.
Haley, Violet Lowery
Va.
LL.B. 1953, National University
Hall, Aimee Jo
D.C.
B.S. 1949, University of Wisconsin
Hall, Alfred Harold
Va.
Hall, Alvin Lee
S.D.
Hall, Audrey Dorsey
D.C.
Hall, Austin Sylvester
Iowa
B.S. 1942, University of Iowa
Hall, Blair Parks
Md.
A.B. 1952, University of Maryland
Hall, Calvin Edward
D.C.
B.S. in Eng. 1951, Queens University, Canada
Hall, Carlton Lee
Va.
Hall, Charles Llewellyn
Md.
A.B. 1955, The George Washington University
Hall, David Alan
Va.
Hall, Davis Fraser
Va.
Hall, Edward
D.C.
Hall, Elizabeth Bennet
Md.
Hall, Elizabeth Neale
N.H.
Hall, Frances Labadie
D.C.
A.B. 1938, University of Missouri
Hall, George John
Md.
B.Eng. 1947, Catholic University of America
Hall, Grace Leslie
Pa.
A.B. 1948, Lebanon Valley College
Hall, Harriet Ellen
Minn.
Hall, James Ray
W. Va.
B.S. 1948, West Virginia University
Hall, Joseph Clifton
Md.
Hall, Leroy Vandeholdt
D.C.
A.B. 1942, Morehouse College
Hall, Nancy Kay
N.J.
B.S. 1954, College of St. Elizabeth
Hall, Overington Robinson, Jr.
D.C.
Hall, Robert Edward
Va.
Hall, Stanley Rolon
Va.
Hall, Tilda Margaret
D.C.
Hallberg, Frederick Carl
Conn.
Hallberg, Karl O.
Va.
Halleck, Charles White
Ind.
A.B. 1951, Williams College

Haller, Jerome Stuart — N.Y.
B.S. 1951, Queens College
Halley, George John — Idaho
A.B. 1955, Whitman College
Halliburton, William Ralph — La.
Hallinan, Terence Griffin — Va.
B.S. in Ed. 1950, University of Florida
Hallman, Clarence Kenneth — Va.
Halow, Mary — Md.
Halpert, Nathan Jabotinsky — D.C.
Halsey, Davis — N.H.
Halsey, Joseph Henry — D.C.
Ham, Bertram Grantham — Va.
A.B. 1951, University of Southern California
Ham, Martha L. — N.C.
Ham, Mildred A. — Md.
A.B. 1954, Ohio University
Hambleton, Elizabeth — Ill.
B.S. 1916, University of Chicago
Hamblen, Warne Stanton — Ariz.
A.B. 1950, Brigham Young University
Hamby, Keith O'Connor — Ohio
B.S. 1949, University of California
Hameroff, Gerald — Md
A.B. 1951, Hunter College
Hamill, Robert David — Pa.
Hamilton, Alexander Moore — Oreg.
Hamilton, Dale Leslie — D.C.
Hamilton, Gertrude A. — Va.
B.S. 1940, Indiana State Teachers College
Hamilton, Helen Elizabeth — D.C.
Hamilton, James Andrew — Va.
A.B. 1953, Morningside College
Hamilton, James Erskine — D.C.
A.B. 1951, College of the Holy Cross
Hamilton, Janace Ann — Okla.
Hamilton, John Newcomb — Va.
B.S. 1935, University of Maine
Hamilton, Louise — Ariz.
B.S. in Ed. 1943, University of Missouri
Hamilton, Philip Madison, Jr. — Md
Hamler, Dollie Rubye — Iowa
A.B. 1940, The George Washington University
Hamlin, Robert Lee — Va.
A.B. 1950, Oberlin College
Hamm, Charles Sherman — Md.
A.B. 1949, A.M. 1951, The George Washington University
Hammack, Gloria Mae — D.C.
Hammel, Claire Louise — Md.
Hammerman, Murray Frederic — D.C.
B.S. 1955, The George Washington University
Hammond, Claudia Carter — D.C.
Hammond, Donald Bruce — D.C.
Hammond, Harlan Young — Utah
A.B. 1949, University of Utah
Hamon, William Joseph — Va.
B.M.E. 1951, The George Washington University
Hampshire, Alan Curtis — R.I.
A.B. 1953, Amherst College
Hampton, Carlton Lewis — D.C.
Hamrick, James Dudley — W.Va.
Hanache, Marie Adele — N.Y.
A.B. 1951, College of New Rochelle
Hanagan, Peter Paul — N.M.
B.S. 1954, Georgetown University
Hanawalt, Mary Catharine — Pa.
Hance, Edward Hance — Va.
B.S. 1946, University of South Carolina
Hancock, Nell — Tenn.
Hand, Harold Ronald — Pa.
B.S. 1952, Franklin and Marshall College
Hand, Thomas Miller, Jr. — D.C.
Hand, William Lawrence — Va.
Handler, Harry Bernard — Pa.
Handmaker, Muriel Beton — Ky.
Handy, Hilda Clara — Md.
Hanes, Oscar Mack, Jr. — N.C.
Hanes, Richard Wayman — Colo.
B.S. in E.E. 1953, Purdue University
Hanes, Leslie J. — Va.
A.B. 1954, The George Washington University
Haney, Joanne Alexander — Va.
Hanford, Lennis Ann — Indiana
Hankins, Mary Lilace — Va.
B.S. 1949, Howard University
Hanley, John Wayne — Va
B.S. 1944, U.S. Military Academy
Hanley, Thomas Joseph — Md
Hann, Emma Jean — D.C.
B.S. 1952, Hood College
Hann, William Ewald — D.C.
B.S. 1952, Western Teachers College
M.S. 1956, The George Washington University
Hanna, George I. — Va
Hanna, Robert James — Ind.
Hannebaum, Lamar Ray — Ohio
Hannegan, Joseph Francis — Okla.
B.S. 1950, Oklahoma Agricultural and Mechanical College
Hannis, George William, Jr. — Pa.
Hansbrough, Harry Samuel — D.C.
Hansen, Bernard L. — Va.
B.C.E. and M.C.E. 1948, Rensselaer Polytechnic Institute
Hansen, Juel, Jr. — Md.
Hansen, Melvin Robert — Nebr.
Hanson, Barbara Elizabeth — D.C.
Hanson, Bernice Brown — Va.
A.B. 1937, Carleton College
A.M. 1938, University of Chicago
Hanson, Eric James — Md
B.E.A. 1955, Tyler Institute
Hanson, James Edward — Md.
A.B. 1949, Cornell University
A.M. 1951, Harvard University
Hanson, Kermit Henry — Wis.
A.B. 1951, Carroll College
Hanson, Robert Harold — Va.
Hanson, William Emmett — Conn.
A.B. 1952, University of Connecticut
Hanson, Warren Durward — D.C.
B.S. 1946, University of Minnesota
M.S. 1948, Ph.D. 1950, Purdue University
Haran, Hilda Gay — Ala.
A.B. 1955, The George Washington University
Harbison, Earle Harrison — Va.
A.B. 1948, Washington University
Harbour, Daniel Lee — D.C.
Harden, Paul William — W.Va.
Hardenberg, Terry — Va.
Hardesty, Marion Norton — D.C.

Hardesty, Robert Louis — D.C.
Hardesty, William Harriman — Pa.
A.B. 1954, Carleton College
Hardge, Lucy Anton
Hardin, Carolyn Myrick — D.C.
Harding, Natalie Cowell — Md.
Harding, Chester Arthur — D.C.
Harding, Frank Bernard, Jr. — D.C.
Harding, Franklin Fitzpatrick — Md.
A.B. 1955, College of William and Mary — Va.
Hardinge, Joan Edith
Hardman, Edwin Louis — D.C.
Hargreaves, Frances Boone — W.Va.
A.B. 1952, Denison University — Ohio
Hargis, Earnest Leon
B.S. 1954, Lewis and Clark College — Oreg.
Hardy, Frank Merrel — Md.
A.B. 1948, New York University
M.S. in P.H. 1951, University of North Carolina
Hardy, Jerry Steele
Hardy, Thomas Jerome — Mo.
B.S. 1941, Purdue University — Mich.
A.M. 1954, University of Notre Dame
Hare, Ruby Lesley — N.C.
A.B. 1935, The George Washington University
Hargreaves, Philip Clifford
Hargreaves, Robert Alan — D.C.
Hawkins, Caroline Jane — R.I.
Harkness, Annie Dwayne — Va.
Harley, Patricia — Tenn.
A.B. 1951, Smith College — Va.
Harris, Douglas Edward
Harris, Clifford Dwayne — D.C.
Harrison, John Eugene — Va.
A.B. 1947, A.M. 1948, West Virginia University — Va.
Harmon, Marcia Jean
Harmon, Richard Charles — D.C.
A.B. 1950, The George Washington University — D.C.
A.M. 1952, Harvard University
Harper, Howard Richard
B.S. 1955, University of Rhode Island — R.I.
Harper, Chester Sherman
Harper, Ralph Emerson — Tenn.
A.B. 1950, The George Washington University — D.C.
Harper, George Albert, Jr. — Pa.
Harper, Julian Harvey — D.C.
Harper, Jesse Harper — Va.
B.S. 1952, Radio College
Harper, Marion Louise — Va.
Harper, Mary Louise — D.C.
Harper, Samuel Hopkins — D.C.
Harper, William Rogene — D.C.
A.B. 1952, Randolph-Macon College — Va.
Harper, Lawrence Wayne
Harper, Richard Hardwick — N.M.
B.S. 1950, Roanoke College — D.C.
Harper, William James — D.C.
B.S. 1952, New Jersey State Teachers College — N.J.
Harrington, George Sandray
B.S. 1952, Virginia Military Institute — D.C.
Harrington, Leander Lewis, Jr. — Del.
A.B. 1954, University of Delaware

Harrington, Robert Drummond, Jr. — Va.
B.S. in M.E. 1952, Virginia Polytechnic Institute
Harris, Bertha Elaine — N.C.
Harris, Charles Marshall — Va.
B.S. 1951, Salem College
Harris, David John — Mo.
A.B. 1954, William Jewell College
Harris, David Neal — Okla.
Harris, Dorothy Elizabeth — Fla.
Harris, Frank Lee — D.C.
B.S. 1954, Howard University
Harris, Haskell French — D.C.
B.S. 1950, University of Tennessee
Harris, Jane Muldrow — Va.
A.B. 1937, Western Michigan College of Education
A.M. 1940, Northwestern University
Harris, John Clarence — D.C.
Harris, Mary Ellen — D.C.
Harris, Melvin Ray — Va.
A.B. 1955, The George Washington University
Harris, Paul Russell — D.C.
Harris, Ramsey Vose — Calif.
Harris, Robert Burton — Mass.
Harris, Sallie Belle — Fla.
Harris, Sidney — N.Y.
B.B.A. 1953, College of the City of New York
Harris, Susan Knedler — Calif.
Harris, Virginia Marie — D.C.
A.B. 1950, A.M. 1954, Howard University
Harris, Wesley Greaves — Va.
Harris, Willie Lee, Jr. — N.C.
Harrison, Alexander — Md.
A.B. 1951, The George Washington University
Harrison, Allen Hugh, Jr. — D.C.
A.B. 1954, The George Washington University
Harrison, Barbara Jean — Fla.
B.S. 1955, University of Miami
Harrison, Clad Bowling — Va.
Harrison, Clay Yelling — Pa.
Harrison, Judith Reid — D.C.
Harrison, Katherine Turner — D.C.
A.B. 1950, University of Maryland
Harrison, Polly Randolph — Md.
A.B. 1954, Pennsylvania State University
Harrison, R. H., Jr. Thompson — Md.
Harrison, Thelma Woodard — D.C.
Harrison, George Lanham — D.C.
B.S. 1927, U.S. Naval Academy
LL.B. 1954, The George Washington University
Harrison, Geraldine
Harrison, Robert Curtis — Md.
Harrison, Ruby — Va.
Harrison-Wood, Inez — Idaho
B.S. 1941, M.S. 1948, University of Idaho
Harrison, Russell — D.C.
Hart, John Edward, Jr. — Fla.
Hart, John Hinton — Va.
B.S. in M.E. 1954, Purdue University
Hart, Katherine Costello — D.C.
Hart, Keith — Md.
Hart, Lee Joseph — D.C.
Hart, Roger Wayne — Ohio

Harte, Phyllis Jacqueline — D.C.
A.B. 1954, The George Washington University

Hartford, Thomas James — D.C.
B.S., M.D. 1925, University of Nebraska

Hartley, Edwin A. — Va
Ph.B. 1939, LL.B. 1949, Dickinson College
A.M. 1951, The George Washington University

Hartley, Henry — Md.

Hartley, Janet Wilson — D.C.
B.S. 1949, University of Maryland
M.S. 1951, The George Washington University

Hartman, Edward Ward — Va

Hartman, Lewis Perry — Va.
A.B. 1954, Goshen College

Hartman, Robert Paul — Va

Hartman, William Davis — Md.
B.S. 1934, Pennsylvania State University

Hartrick, Norma Berniece — Ohio
A.B. 1955, Baldwin-Wallace College

Hartung, Ruth E. — Md

Hartwell, Marjorie Elaine — Va

Hartwig, Leonard John — D.C

Hartzell, Dwight Jeffery — Pa
A.B. 1951, Amherst College

Harvey, Barbara Sillars — Md

Harvey, John Charles — Calif.

Harvey, Joyce Mae — D.C

Harvey, Robert F. — Md
B.S. in M.E. 1953, Washington University

Harvercutter, Helen Jean — Md.

Harvison, Barbara Suzanne — Va

Harwood, Carl Raymond — Md.

Harwood, Harold Sherlock, Jr. — Va.

Hasal, Milan Jiri — D.C.
B.S. 1952, American University

Hasalova, Milica Jelizaveta — D.C.
B.S. 1954, The George Washington University

Haseh, Samuel Lee — Md.

Hashim, Hoda — Egypt

Haske, John Reed — Va

Haske, Kenneth Edward — Va
B.S. in M.E. 1951, Virginia Polytechnic Institute

Hasselwander, LeRoy Harry — Va.

Hassett, Ennis James — N.H.
A.B. 1952, Boston University

Hastings, Charles Frederick — Fla

Hastings, Peggy Jean — Va.

Hatch, Lawrence Worth — Va
B.S. in Ed. 1950, Madison College

Hatef, Mahmood — Iran

Hatfield, Loraine H. — Md
B.S. 1926, Northwest Missouri State College

Hatten, Leo Albert — Texas
B.B.A. 1954, University of Texas

Hattersley, Fred John — Va

Hattersley, Richard David — Va

Hatton, Bruce Milton — Calif.
A.B. 1954, Occidental College

Hatton, Walter George — D.C.
A.B. 1934, New Jersey State Teachers College, Montclair

Haugan, Gertrude Marion — Pa.
A.B. 1952, The George Washington University

Haugh, Oscar Coleman, Jr. — Mass.

Haugsten, Lois — N.J.

Hauk, Raymond — Md.

Hauptman, Sidney — N.J.
B.S. 1943, College of the City of New York

Hauptmann, William Francis — Md.
B.S. 1954, The George Washington University

Hauser, Nathaniel William — Md.

Haussmann, John Henry — Md.

Hauver, Herman Albert — Pa.
B.S. 1933, Gettysburg College
A.M. 1939, Columbia University

Havenner, Johann Lee — Va.

Havens, William Dodge, Jr. — Pa.

Haverland, John William — Md.

Haverty, Edward Handloe — D.C.

Haver, Richard Joseph — Pa.
A.B. 1954, Muhlenberg College

Hawk, Shirley Mayne — Va.

Hawkins, Edward John — Md.

Hawkins, Eva Fridell — N.J.

Hawkins, James Neil — Calif.

Hawkins, Sue Elizabeth — Pa.

Hawkins, Thomas Preston — Pa.

Hawkes, Pauline Louise — Calif.

Hawn, Barbara Jean — Pa.
A.B. 1951, Western Washington College of Education

Haworth, Kenneth Kendall — Pa.
M.S. 1950, Oregon State College

Hayakawa, Masuo S. — Hawaii
A.B. 1947, University of Hawaii

Hayashi, Yoshito — D.C.
A.B. 1950, University of Hawaii

Hayden, Mabel Elizabeth — D.C.

Hayes, Bessie Edmonson — Md.
B.S. 1946, Miner Teachers College
A.M. 1949, Catholic University of America

Hayes, Donald Joseph — Calif.
B.E.E. 1953, Cornell University

Hayes, Eldridge Kendall — Va.
B.S. 1954, University of Maryland

Hayes, Janet Lucas — Va.

Hayes, Lorenzo Bernaye — Va.
A.B. 1941, Morris College

Hayes, Thomas Townsend, Hirst — Va.

Haygood, William Dale — Pa.

Haymaker, George Russell, Jr. — Pa.

Haynes, Boniface Kane — Va.

Haynes, Doris Bowman — D.C.
B.S. 1939, Miner Teachers College

Haynes, Nell Henry — Va.

Haynes, Samuel Mercell — Va.
A.B. 1951, Georgetown College

Haynes, William Andrew, Jr. — Va.
B.S. in E.E. 1942, B.S. in M.E. 1951, Rose Polytechnic Institute

Haynes, William Preston — D.C.

Hays, Boyd, Jr. — Va.

Hays, Charles — Va.
B.S. in E.E., B.S. in Math. 1952, University of Michigan

Hays, James Robert — Fla.

Hayson, Rudard Neil — Md.
B.S. 1956, University of Maryland

Hayward, Richard Carlton Md.
A.B. 1954, University of Maryland
Haywood, Alice Evelyn Fla
Head, Earl Murdock Md.
D.D.S. 1947, University of Louisville
Headley, Donald Otis D.C.
Healey, Patrick Francis Md.
Healy, John Matthew Ohio
B.S. 1950, University of Notre Dame
Heater, Thomas Hendrix, Jr. Va.
Heaton, Jane Marie D.C.
Heaton, Lewis Adams D.C.
Heath, Robert George D.C.
Heatherington, James Rufus Va.
A.B. 1954, College of William and Mary
Heaton, Glenn Earl
Heaton, William Edmond Va
B.S. in M.E. 1947, Purdue University Ind
Heavner, Jean Louise D.C.
Heavner, Theodore James Chopard Ohio
A.B. 1951, Western Reserve University
Hebb, Emma Lee Va.
Hebel, Roy Bernard D.C.
Heck, Albert Paul Herman Md.
Heckathorn, John Henry Md
B.S. in C.E. 1950, University of Idaho
Heckert, John Dalton W.Va.
A.B. 1951, West Virginia University
Heckman, Bernard Alvin D.C.
Hed, Marvin Lowell Va
Heeberg, Stanley Lorraine Bovard D.C.
Heeter, Vernon David Mich.
A.B. 1942, Yale University
Heffick, Ben Lemon Sherwood Va
Heffick, Betty Mace Va.
A.B. 1952, The George Washington University
Hee, Olman
B.S. 1938, University of Minnesota Md.
Heegan, William Xavier Calif.
Heffernan, Richard Thomas Va
Heffner, Joan Marie Md
Heffner, Paul D.C.
Heflin, Edward Murray D.C.
Hefner, William Edwin D.C.
B.S. 1949, Georgetown University
Hegarty, Harold Duane Va
Heidler, Lenan Va.
A.B. 1947, A.M. 1951, New York University
Heidelberger, Peter Alexander Md
Dr. rer. Law 1949, University of Munich
Heidenreich, Dorothy Elinor D.C.
Heigam, Llewellyn Maitland, Jr. Md
Heiges, Frederick Carl N.Y.
B.S. 1949, St. Joseph's College
LL.B. 1952, Cornell University
Heil, John Joseph Md.
A.B. 1953, The George Washington University
Heil, Mildred Montgomery Md
Heim, Jean Russell Minn
A.B. 1935, LL.B. 1937, University of Minnesota
Heiman, John Paul Puerto Rico
Heine, Howard George Md.
A.B., A.M. 1950, The George Washington University
Heinegan, Amalia Md.
A.B. 1954, Hood College
Ed.M. 1955, Goucher College

Heinen, Maria Ida D.C.
Heiner, William Robert Md.
A.B. 1945, Frostburg State College
Heinke, Lowell Jack Va.
B.S. 1954, Case Institute of Technology
Heintz, Alvin Eugene Md.
B.S. 1955, Sweet Briar College
Heintze, Ruth Wilson D.C.
B.S. 1955, University of Maryland
Heintz, Lucian Carl Pa.
B.S. 1951, U.S. Naval Academy
Heintz, Madeline Catherine D.C.
Heisler, Barbara Jane Md.
Heilemann, Eli Md
Heilman, Donald Clement Va
B.S. 1947, U.S. Military Academy
J.D. 1951, University of Chicago
Heilmann, Raymond Lewis Va
B.S. 1951, Mount St. Mary's College
Heims, James Boone D.C.
Helms, Mustafa Ahmed Egypt
A.B. 1948, Fresno University
Helsing, Howard Corbine D.C.
Heiton, Harvey Jack Va
Heinstes, Myra Lee Md.
A.B. 1942, University of Kentucky
A.M. in Ed. 1943, The George Washington University
Hemingway, William Parish Ill.
B.S. 1950, University of Colorado
M.S. 1951, University of Wisconsin
Hemsteroth, Stanley William Md.
B.S. 1957, Ohio State University
Henderlight, Lawrence Raymond Pa.
Henderson, Charlotte Mercedes D.C.
Henderson, Ezra J. D.C.
A.B. 1933, Bowdoin College
Henderson, Eugene of Brian Maine
A.B. 1951, Bowdoin College
Henderson, Herbert Hoover W.Va.
B.S. 1951, West Virginia State College
Henderson, John William, Jr. Va.
Henderson, Lawton See Va.
Henderson, Robert Bernard D.C.
B.S. 1941, Missouri State College
Henderson, Robert Sellmeier Va.
Henderson, Russell Steward D.C.
Henderson, Walter D.C.
Henderson, Josephine Whistler D.C.
Henderson, Mary Lou Md.
Henderson, Alfred Garnett D.C.
A.B. 1940, A.M. 1951, The George Washington University
Hendrick, Harold Herbert D.C.
B.S. 1956, Southwest Missouri State College
A.M. 1940, University of Missouri
Hendrix, James Bailey Md
Hendrickson, George Milton Md.
B.S. 1951, University of Maryland
Hendrix, Stanley Markham D.C.
Hendrickson, James Michael D.C.
Hendrickson, John Williams Conn.
A.B. 1955, The George Washington University
Hendrickson, Robert John N.J.
B.S. 1955, University of Maryland
Hendrickson, Jeannette Mary Minn.
B.S. 1954, College of St. Teresa
Hendricks, Elizabeth Sue D.C.
Hendricks, James Carter Va

Henry, Barbara Anne D.C.
B.S. 1954, University of North Carolina
Henry, Grady Wallace, Jr. Va.
Henry, James Faulkner W.Va.
Henry, Jo Ann D.C.
Henry, Shendrine Boyce D.C.
A.B. 1940, Hunter College
Henry, William Stokes Va.
A.B. in Ed. 1950, Catholic University of America
LL.B. 1952, Georgetown University
Henschel, Harold Clarence Va.
B.S. 1948, University of Maryland
Hense, William Norman Md.
Hensel, David Baker Va.
Hensley, Dorothy Ann Va.
Henshaw, Edmund Lee, Jr. Va.
B.S. 1954, University of Maryland
Henshaw, Ida Jean D.C.
Hensnaw, Robert Harvey Va.
Henson, Edwin Neely, Jr. D.C.
A.B. 1948, LL.B. 1951, The George Washington University
Henson, William Kenneth D.C.
Henston, Barbara Mersy D.C.
Henstone, James V. N.J.
B.S. 1954, Lehigh University
Henton, John Frank Pa.
Hepplauer, Barbara Anne Md.
Herberger, James Anthony Va.
Herbert, Edward, Jr. Pa.
B.C.E. 1947, Lehigh University
Herbert, Perry Ray Ohio
A.B. 1952, Muskingum College
Herbert, John Ewald Ohio
A.B. 1952, Princeton University
Herbert, Thomas Oliver D.C.
B.E.E. 1953, Catholic University of America
Herbig, Susan Esther N.J.
A.B. 1952, Wheaton College
Herbst, Robert Thomas Va.
A.B. 1951, Bethany University
Herbst, Robert Van Cortlandt D.C.
Hercules, Wendell Lee Va.
A.B. 1941, Marquette University
Hereth, Walter A. Md.
B.I.E. 1951, Rensselaer Polytechnic Institute
Herget, Caroline Chandler S.C.
A.B. 1950, Limestone College
B.S. L.S. 1954, University of North Carolina
Hergert, Robert Francis Md.
Herlitz, Katrina Hild Sweden
Herman, Anna Bernadine Pa.
Hermann, Allen Gerald Va.
A.B. 1950, Bridgewater College
Hermann, Donald Charles Pa.
Herman, Elsie D.C.
Herman, Maurice Arnold D.C.
Hermann, Morton N.Y.
Hermann, Richard McElhenny Pa.
A.B. 1942, Washington and Lee University
Hermann, Sarah Ann Va.
Herms, Ethel Chester La.
B.S. 1942, U.S. Military Academy
A.M. 1950, Vanderbilt University
Herold, Margaret Ann Va.
Herrel, Ronald David N.Y.

Herrera, Alfred Charles Texas
B.S.M.E. 1951, University of Minnesota
Herrington, Marian McNabb D.C.
B.Mus. 1950, University of Kansas
Herman, William Lee, Jr. Va.
Hershberger, Hazel Kuhns Pa.
Hershkowitz, Irving Pa.
Hertzog, Alma Va.
Herzig, Donald Hiner Pa.
Herzwurm, Stanley Edward Germany
Herrig, Harvey Sander Va.
B.E.E. 1955, University of Colorado
Hesaltine, Charles Edwin, Jr. Va.
A.B. 1954, The George Washington University
Hess, John Borden Ohio
B.S. 1937, U.S. Naval Academy
Hess, Robert Walter D.C.
Hesse, Carole Theresa Pa.
Hessler, Regan Joseph Md.
A.B. 1951, University of Maryland
Hester, Mildred D.C.
A.B. 1918, Maryville College
Hester, Zack L. Md.
Hetrick, Robert Owen Md.
A.B. 1951, LL.B. 1954, Washington University
Hewett, Clifford Adelbert Va.
Phar.G. 1937, Columbia University
B.S. 1950, The George Washington University
Hewitt, Sarine Berner D.C.
A.B. 1931, A.M. 1938, University of California
Hewlett, Orchard Winfield Glenn Md.
Heppman, Jack Joseph Md.
B.S. 1950, St. Mary's College
Heyland, Christine Raye D.C.
B.S. 1954, University of Maryland
Hickey, George Michael D.C.
Hickey, Lawrence Eugene Va.
Hickle, Frank Lewis, Jr. Md.
Hickman, Christine Poe W.Va.
Hicks, Dana Monroe Va.
B.S. 1954, West Virginia University
Hicks, Horace Edward, Jr. Va.
Hicks, John Thomas Lamontine Pa.
Hickson, Linda Jane Pa.
Hiebert, Lawrence Gordon Va.
A.B. 1950, University of Kansas
A.M. 1954, The George Washington University
Higbie, Gerald Warren Va.
Higginbotham, Dana Alton Va.
Higgins, Frank Vernon Va.
B.S. 1947, Roanoke University
M.S. 1954, Texas College of Veterinary Medicine
Higgins, James Reed Pa.
Higginbotham, Kaye Va.
Higginbotham, Sara Ann Cochran W.Va.
Higgins, George W., Jr. Fla.
B.S. 1950, New York University
High, Joe Benton Md.
B.S. 1948, The George Washington University
Higley, Robert, Jr. Md.
B.S. 1948, Southwest Missouri State College
Hight, Warren D. Fla.
Hightower, Ina Morris

Hightbotham, Fred Robert Va.
A.B. 1949, Fairmont State College
Hightower, Pauline L. D.C.
B.S. in L.S. 1951; M.Ed. 1956, University of Pittsburgh
Hightower, Gordon Talbot, Jr. Mich.
B.S. in C.E. 1954, Michigan College of Mining and Technology
Hightower, Johanna Gertrude
Hightower, Richard Mich.
Hilbert, Edward Va.
A.B. 1951, LL.B. 1952, The George Washington University
Hill, Arthur Fielding Va.
A.B. 1951, The George Washington University
Hill, Berry Reading Va.
A.B. 1955, The George Washington University
Hill, Charles Albert, Jr. Va.
B.S. 1941, U.S. Naval Academy
Hill, David Walter Va.
B.S. 1953, Bucknell University
M.S. 1954, Cornell University
Hill, Harriet Edward, Jr.
Hill, Howard Carefree Md.
Hill, James Merwyn Va.
Hill, Jane Margaret Va.
B.S. in Ed. 1949; A.M. 1948, Ohio State University D.C.
Hill, John Irwin
Hill, Lucia Boyett Md.
Hill, Maude Lee Va.
Hill, Reverend Alexander Va.
B.S. in E.E. 1950, Agricultural and Technical College of North Carolina Ga.
Hill, Roberta
Hill, Roscoe V., F. D.C.
B.F.A. 1951, Rhode Island College of Education D.C.
Hill, Ruth Weldon
A.B. 1949, Wellesley College D.C.
Hill, Stanley LeRoy
B.S. 1954, Georgetown University N.J.
Hill, Watson Dean
B.S. 1954, Ohio State University Md.
Hillegas, Ray Case
A.B. 1955, University of Utah D.C.
Hilliard, William Mead
A.B. 1943, Howard University D.C.
B.D. 1945, Bethel Seminary Md.
Hilliard, Willie W.
A.B. 1954, College of William and Mary Va.
Hillman, Vera Mew Va.
B.S. in Ed. 1948; A.B. 1949, University of Cincinnati
Hilton, William Eugene
B.S. 1950, Temple University Va.
Himmelwright, Edward Allen
A.B. 1954, The George Washington University D.C.
Hinchman, George Charles
Hinchman, Nathan Gordy
Hinchman, Stephen Wayne W.
A.B. 1951, Richard Hart D.C.
Hinckley, Robert Eugene Va.
A.B. 1949, University of Akron
Hinckley, Walter Gilbert
A.B. 1950, University of Wisconsin Va.
Hinds, Adelaide Jessup
B.S. 1949, LL.B. 1951, University of Wisconsin Wis.

Hinds, David Allen Md.
A.B. 1952, St. Lawrence University
Hinegardner, William Bernard Md.
B.S. in E.E. 1950, Kansas State College
Hinemann, Ernest D.C.
Hinesley, Joseph D.C.
B.S. 1948, The George Washington University
Hinkelman, Marianne D.C.
Hinkle, Ezra Pierson Va.
A.B. 1947, Emory and Henry College
Hinnant, Elmer Mac Va.
Hinnant, Fred Edward D.C.
Hinnebusch, Yale Ill.
B.S. 1952, University of Illinois
Hinson, Joseph Eugene Pa.
Hinsperger, Darrell Eugene W.Va.
Hinsperger, John Lennon Ind.
B.S. 1954, U.S. Military Academy
Hinsdale, Cecil Ann I.C.
Hinshaw, Eugene Virginia Md.
A.B. 1951, Vanderbilt University
Hinsley, William Ray Ga.
Hinsperger, Gene Dorchand Indiana
Hinsperger, Shanta Indiana
Hinshaw, Jane D.C.
Hinshaw, Edwin Dean Iowa
B.S. 1953, University of Dubuque
Hinshaw, Jesse Orme, Jr. Va.
Hinshelwood, George Dawson D.C.
Hinson, George Ford D.C.
A.B. 1947, Allegheny College
Hintz, Hannibal Lowe, Jr. Calif.
A.B. 1954, Susquehanna State College
Hinton, Bernard Carl Va.
Hiong, Sarah Hawaii
A.B. 1955, University of Hawaii
Hipkins, Arthur Eugene Md.
B.S. 1951, College of the City of New York
Hippensteel, Ruben Dee Md.
Hippensteel, Kenneth Pa.
Hippensteel, Katherine Francis Md.
Hipp, Addison Reynolds D.C.
Hipp, Cornelius Wagner D.C.
Hippenhammer, Joseph Gregory Va.
A.B. 1951, Georgetown University
Hirn, John Franklin D.C.
Hirn, William Randolph D.C.
Hirst, Joseph Gordon Va.
B.M.E. 1950, North Carolina State College
Hirshfield, Sidney Gerson Md.
A.B. 1950, Gettysburg College
Ed.M. 1952, Johns Hopkins University
Hirsman, William, Jr. N.J.
Hirsmanski, Wilfred Clayton, Jr. Va.
Hirst, Marion Fiske Md.
Hirsch, Thomas Dunlap Va.
B.S. 1954, Virginia Polytechnic Institute
Hirshon, Eleanor Allen D.C.
A.B. 1950, Vassar College
Hirshon, Howard [illegible], Jr. D.C.
Hirshon, [illegible] Forrest Va.
A.B. 1949, University of Georgia
Hirshon, Morris Edmund, Jr. Va.
Hirshon, Irving Wilson D.C.
B.S. 1951, Pennsylvania State University
Hirshon, Richard R., II Va.
A.B. 1951, Princeton University
Hirshman, Mark Norman D.C.

Hochstein, Robert A. D.C.
B.S. 1961, College of the City of New York
Hocker, Richard Kelly Ariz.
A.B. 1955, University of Arizona
Hodge, Clarence Hardman Calif.
Hodge, David MacMahan Va.
B.S. 1949, Georgetown University
Hodges, Betsy Lee D.C.
A.B. 1953, Agnes Scott College
Hodges, Dan Allen Va.
Hoeman, Jack Charles D.C.
Hoehn, Robert Bentley, Jr. Va.
Hoehn, Roberta Mae D.C.
Hoes, Donald Allen D.C.
B.S. 1954, University of Cincinnati
Hoff, Frank Xavier Va.
B.S. 1949, Mt. St. Mary's College
Hoffland, Paul D.C.
A.B. 1956, Princeton University
Hoffman, Charles Ianello D.C.
Hoffman, Charles Michael Va.
Hoffman, Daniel Md.
B.S. 1952, University of Maryland
Hoffman, Doris Marie D.C.
Hoffman, George Dewey Wash.
B.S. 1954, U.S. Naval Academy
Hoffman, Mary Elizabeth D.C.
Hoffman, Paul Lester D.C.
Hogue, Douglas LeRoy Md.
B.S. 1950, The George Washington University
M.S. 1954, Massachusetts Institute of Technology
Hogue, James Lewis Va.
Hogue, John Edward Minn.
A.B. 1954, University of Minnesota
Hogan, Thomas Patrick Ind.
Hogan, William Francis Va.
Hogan, William Joseph Mass.
Hogue, Henry William Va.
A.B. 1949, A.M. 1950, University of New Hampshire
Hogue, William Marston Va.
A.B. 1948, A.M. 1948, The George Washington University
Ph.D. 1954, Catholic University of America
Hohlt, Ernest Clarence, Jr. Va.
Hoiles, Howard Deane Va.
Holden, Donald Russell D.C.
Holcomb, John Kenneth Wis.
B.C.E. 1941, B.M.E. 1942, Marquette University
A.E. 1949, California Institute of Technology
Holder, Eugene Loyce Calif.
A.B. 1953, University of California at Los Angeles
Holder, Richard Joseph Va.
Holder, Sam Ill.
Holdsworth, Simon D.C.
A.B. 1939, Brooklyn College
Holford, Ralph Marion Md.
Holland, Harold Herbert Va.
Holland, Harrison Melsher Wash.
A.B. 1944, University of Washington
A.M. 1949, Columbia University
Holland, John Theodore D.C.
B.S. in E.E. 1955, Pennsylvania State University
Holland, Roberta Ann N.M.
Holland, William Bryan Va.

Hollander, Ronald Bruce D.C.
Hollaway, Marion Everett Del.
Holler, Jeanne Love Va.
Hollett, Bernice Carol Fla.
Holley, John Calhoun, Jr.
A.B. 1952, Vanderbilt University Va.
Holliman, William Reid, Jr.
B.S. 1955, The George Washington University Va.
Hollingsworth, Herbert Anthony John Va.
Hollingsworth, John Allen
A.B. 1951, University of Virginia Pa.
Hollinshead, Ariel Cecile
A.B. 1951, Ohio University
A.M. 1955, The George Washington University Pa.
Hollis, Pauline Elizabeth
B.S. 1951, The George Washington University Va.
Hollister, Donald Charles Pa.
Hollister, Elmer James
B.S. 1952, University of Pittsburgh Va.
Holly, Evelyn M. Texas
Holman, Alva Russell
B.S. 1954, Hardin-Simmons University Fla.
Holmes, Herbert Hodges
B.S. in Ed. 1951, University of Florida Pa.
Holmes, Howard James
B.S. 1950, Wilkes College Texas
Holmes, Mary Alice
A.B. 1950, The George Washington University Ohio
Holmes, Deborah Ann Md.
Holmes, Frank John Va.
Holmes, Marion Donald
B.S. 1945, U.S. Naval Academy Va.
Holmes, Nancy Lee N.J.
Holmes, Rogers Thurston Va.
Holsher, Merton Charles
A.B. 1942, The George Washington University Pa.
Holsinger, Samuel D.C.
Holstead, Richard Garrett
Holsinger, Irene Romania
B.S. 1954, Maryland State Teachers College, Towson Va.
Holt, Donald Lewis
A.B. 1954, University of California N.M.
Holt, John Emery Ohio
Holt, Norman Edward D.C.
Holt, William Henry Md.
Holtum, Arthur Patrick
Ph.B. 1928, University of Notre Dame Mass.
Holtzman, Gerhard Philip Pa.
Holtzer, James Anthony Pa.
Holzinger, John Edward, Jr.
B.S. 1950, Pennsylvania State University Va.
Holzman, Herbert Miley, Jr. Va.
Homsy, Beana C. M. Va.
Homsy, Joseph Jabin Pa.
Honeberger, Robert Riley
Honn, Kenneth
B.S. 1951, Drexel Institute of Technology Iowa
Honnaman, Harold
B.S. 1951, Michigan State Normal College Ohio
Honser, Mary Elizabeth
B.S. in Ed. 1950, Kansas State University
A.M. in Ed. 1952, The George Washington University D.C.
Homsted, Irene J

Horsberger, Helen Alice
A.B. 1954, University of Pennsylvania — Md
Horseman, Sandra Ann — D.C.
Horsley, Daniel — Md.
B.C.E. 1947, College of the City of New York
Horsley, Jeanne Eriksson
Horsley, Fred E., Jr. — D.C.
Horsley, George Joseph — D.C.
Horst, Mildred Beach — Nebr.
Horst, Miriam Estelle — D.C.
A.B. 1928, Evansville College — D.C.
A.M. 1931, University of Chicago
Horstkoetter, Raymond Brooks, Jr. — N.C.
A.B. 1952, Duke University
Horton, Arnold David — Ark.
LL.B. 1955, National University
Horton, Jesse Edwards — Va.
Horton, Melvin Ivey — D.C.
Horton, Walter Marshall — D.C.
Horton, Charles Durant — Md.
B.S. 1951, Haverford College
Horton, John Nelson — D.C.
B.S. 1954, University of Maryland
Horton, Robert Lewis — Pa.
B.S. 1948, Pennsylvania State Teachers College, Shippensburg
Horton, Ross Rodney
Horton, William Gresham — N.J.
Horton, Charles Vester — Md.
Horton, Daniel Sheldon — Conn.
A.B. 1950, Wesleyan College — Mass.
Horton, H. Pinkney — Md.
B.S. 1951, Oklahoma Agricultural and Mechanical College
M.A. 1954, University of Maryland
Horton, Isaac Bassett
Horton, John Ross — D.C.
Horton, Ned S., Jr. — Ga.
Horton, Hughes Freeman — Md.
B.S. 1951, M.S. in Ed. 1954, University of Pennsylvania — D.C.
Horton, Robert Scott
A.B. 1950, Bridgewater College — Md.
Horton, Robert Henry
Horton, Robert
A.B. 1948, American University — Va.
Horton, Thomas Lee — D.C.
B.S. 1950, College of the City of New York
A.M. 1954, Pennsylvania State University
Horton, Thomas Marcaret
Horton, Richard Stovall — Md.
A.B. 1954, [illegible] — Md.
Horton, [illegible] College — Va.
Horton, [illegible]
Horton, [illegible] — Md.
Horton, [illegible] — D.C.
A.M. 1948, Columbia — Va.
Horton, Thomas Morton
Horton, Jean Mary
Horton, Richard Harry — Va.
A.B. 1954, Gettysburg College — D.C.
Horton, Wayne Eby — Pa.
B.S. 1943, College of William and Mary — Va.
M.Ed. 1950, University of Maryland
Horubeck, Russel H. — Va.

Horvat, Philip Scott — Va.
Horvitz, Ross Charles, Jr. — S.D.
A.B. 1948, Augustana College
A.M. 1952, The George Washington University
Horwitz, Betty Lou — D.C.
Horwitz, Robert Otto — Ind.
Horwitz, Raymond — D.C.
B.S. 1948, College of the City of New York
Horwitz, Florence Gary — D.C.
Horwitz, Lee — D.C.
Horwitz, Phoebe Pennie — D.C.
A.B. 1942, McKendree College
Horwitz, Theodore Turner — Nev.
Horwitz, James Bruce — D.C.
Horwitz, Lee Lemon — Va.
B.S. 1948, Pennsylvania State College
A.B. 1950, The George Washington University
Horwitz, Harold Bruce — N.Y.
A.B. 1950, Princeton University
Horwitz, Jack Robert — N.Y.
Horwitz, Robert Henry — D.C.
Horwitz, Marion E. — Va.
A.B. 1950, Mississippi College
Horwitz, Benjamin Lawrence — D.C.
Horwitz, Benjamin B. — Nebr.
Horwitz, Richard Wallace — Md.
Horwitz, Lucy — Va.
A.B. 1949, Woman's Missionary College
J.D. 1952, LL.M. 1953, The George Washington University
Horwitz, George Bloomfield — D.C.
A.B. 1951, The George Washington University
Horwitz, Anna Claypool — Va.
A.B. 1950, Piedmont College
Horwitz, Joanna Rowland — Va.
Horwitz, Mary Ellen — Md.
A.B. 1950, Salem College
Horwitz, Lawrence Samuel — Md.
Horwitz, William Henry — Ohio
B.D. 1949, Yale University
Horwitz, Harry Raymond — Md.
Horwitz, Clifton Crawford — Va.
B.S. 1950, A.M. 1952, University of Missouri
Horwitz, William Ellis, Jr. — Md.
Horwitz, Clarence Vernon — D.C.
A.B. 1951, Eastern College
Horwood, Annie Dudley — Va.
A.B. 1954, College of William and Mary
Hosaflook, Carolyn Ann — Va.
Hosaflook, Francis Joseph — Va.
B.M.E. 1951, Ohio State University
Hosch, Edward Thomas — Md.
Hosch, C. Wilfred — D.C.
Hosch, Harvey Norman — Va.
Hosch, Ellis Maitland — D.C.
Hosch, Jesse R. — Wis.
A.B. 1950, A.M. 1948, University of Chicago
Hosford, Nelson Eugene — Md.
A.B. 1950, The George Washington University
Hosford, William Reed — Nebr.
A.B. 1950, The George Washington University
Hosgood, Frederick Bingham — N.M.
A.B. 1950, University of New Mexico

Howe, Denis Herbert George — Md.
Howell, Mary Jo — Md.
Howell, Richard Wesley — Va.
A.B. 1942, University of California
A.M. 1951, University of Hawaii
Howell, Ruth Lane — Pa.
Howes, Rodney Warren — Pa.
Howerton, John Benjamin — Va.
A.B. 1942, University of Richmond
Howland, Barker Cushman — Mass.
A.B. 1944, Gordon College
S.T.B. 1947, Harvard University
Howland, Mary Elizabeth — Va.
Howley, Rebecca Taylor — D.C.
B.S. 1933, Miner Teachers College
Howrey, William — Pa.
Hoxsie, Elizabeth McNichol — Md.
B.S. 1941, Trinity College
A.M. 1951, The George Washington University
Hoy, Frank Philipp — Va.
Hoy, Thomas Lawson — Va.
Hoyme, Lucile Eleanor — D.C.
B.S. 1928, M.S. 1933, The George Washington University
Hoyt, Hampton DeWitt — Va.
Hozier, Virginia Thomas — Va.
B.S. 1931, Madison College
Hretz, Richard Ernest — Mich.
A.B. 1954, University of Detroit
Hsia, Wen-Hwa — China
A.B. 1949, National Northwestern College of Engineering, China
Hsieh, Chiao Yao — D.C.
A.B. 1939, St. John's University, China
Hsiung, Dick — D.C.
Hsiung, Theodore S., Jr. — D.C.
B.S. in E.E. 1952, Massachusetts Institute of Technology
Hubard, Emmerick Wills — N.Y.
A.B. 1954, Western Maryland College
Hubbard, Barbara Faith — Va.
Hubbard, Lonnie James — D.C.
A.B. 1936, Howard University
A.M. 1941, Columbia University
Ph.D. 1955, Catholic University of America
Hubbard, Robert Everett — Va.
Hubbard, Ruth Dennis — D.C.
Hubbard, Samuel Hubbell — Va.
B.S. 1951, Virginia Polytechnic Institute
M.S. 1955, Massachusetts Institute of Technology
Hubbard, Virginia Dickerson — D.C.
B.S. 1943, Virginia State College
Hubbell, Tom Verne — Va.
Hubbell, Marilyn Lee — D.C.
A.B. 1947, Cornell College
Hubbs, Angela Catherine — D.C.
Hubbuch, Hudson Maxwell — Va.
A.B. 1948, Harvard University
LL.B. 1951, Georgetown University
Huckelberry, Dan G. — D.C.
B.S. in Ed. 1954, Indiana University
Huckman, Arthur Gilmer, Jr. — Md.
Huddleston, Barbara Louise — D.C.
Huddleston, Vann Lane — Va.
Hudgens, Clayton — Texas
Hudgens, Jerry Runyon — Fla.
Hudgins, Lloyd George — Va.
Hudson, Nancy Ann — Va.

Huey, Robert Carter — D.C.
Huff, Jessie Evelyn — D.C.
Huff, Kenneth Bridges — Me.
B.S. 1934, A.M. 1947, University of Missouri
Huff, Richard Lee — Pa.
A.B. 1945, Lincoln University
Huff, Shirley Frances — Va.
A.B. 1953, The George Washington University
Huffer, Harry Robert — Md.
B.S. 1954, University of Maryland
Huffman, Helen Jones — Va.
Huffman, Robert Wesley — Ky.
Huffmaster, Stanley Richard — D.C.
Hufty, John Archibald — D.C.
Hughes, Edna Poole — Pa.
A.B. 1932, East Carolina College
Hughes, Elizabeth Margaret — Md.
Hughes, Genevieve M. Lean — Va.
A.B. 1954, Cornell University
Hughes, James Earl — D.C.
Hughes, James Edward — Va.
Hughes, Jean May — N.Y.
Hughes, Kevin Brendan — D.C.
Hughes, Marianne — Va.
Hughes, Mary Moore — Ala.
Hughes, Robert Irvin, Jr. — Va.
B.E.E. 1951, Georgia Institute of Technology
Hughes, Robert William — Md.
Hughes, Thomas Emery — S.C.
A.B. 1946, St. Mary's Seminary and University — D.C.
Hughes, Thomas Herbert — Va.
Hughes, William Pearl — D.C.
B.S. 1953, Virginia State College
Hughson, James Keefe — D.C.
Hui, Peter Shiu Pui — Va.
Hui, Shiu Tung — Va.
Huiffod, Harriet — N.Y.
Huiffod, Isaac Spafford — Texas
Huit, Grace Lansing — D.C.
Huit, Ivan Stephen — Md.
Huit, Kenneth Dewyee, Jr. — Me.
A.B. 1950, Stanford University
Huit, Marjorie Ina — Ohio
A.B. 1927, A.M. 1930, University of California
Huit, Mary Susan — D.C.
Hulbrock, Colonel Robert — D.C.
B.S. 1954, Oregon State College
Hulen, Lamar Price — Conn.
Hulings, Justice Collins — Md.
Hull, Richmond E., Jr. — Va.
Hummel, Donald Joseph — Texas
Humphrey, Hubert Lee — Me.
Humphrey, Howard M. Keezie — Wis.
B.S. 1947, Virginia [illegible]
Humphreys, Lenny Kenneth — D.C.
Humphreys, Kent Stanford — D.C.
B.S. 1943, Brigham Young University
Humphreys, Robert Harold — D.C.
Hundley, Sue Ann — Va.
Hung, Chien Chang — Calif.
A.B. 1937, San Diego State College
A.M. 1939, Columbia University
Hunt, Wellington — D.C.
B.S. 1941, American University
Hunter, William Henry — Pa.
Hunter, Ralph Warner — Va.
Hunsucker, William Cosgrove, III — Va.

Hunt, James Galloway — Va.
Hunt, John Chelsea — Conn.
Hunt, John Conway — D.C.
Hunt, Jon Phillip — D.C.
A.B. in Mus. 1951; A.M. in Mus. 1954, Stanford University
Hunt, Jonn Seymour
Hunt, Rector Conklin Doom — Pa.
B.S. 1937, U.S. Naval Academy — D.C.
A.M. 1950, University of Pennsylvania
Hunt, Richard Johnson, Jr.
Hunter, Charles Maxwell IV — Va.
Hunter, Dean Ross — D.C.
Hunter, Thomas Benjamin III — D.C.
Huntington, Carroll Frederick — Va.
B.S. in E.E. 1949, University of Vermont
Hunton, Charles Clement — Va.
Huntress, John Heath — N.J.
Huntsman, Lawrence Darrow — Va.
B.S. 1938, Pennsylvania State University — D.C.
Hurlocker, Frederick John, Jr.
B.S. 1942, Temple College — Va.
Hurston, Mary Lafon
A.B. 1948, Agnes Scott College — Va.
Hurt, Robert Wade, Jr.
Hurt, Thomas Wilson — D.C.
Hurley, Rose Marie — Md.
B.S. in Ed. 1949, College of the City of New York — Va.
A.M. in Ed. 1951, The George Washington University
Hurley, Mary Annie
A.B. 1948, Geneva College — Va.
A.M. in Ed. 1952, The George Washington University
Husso, Sylvia Ellen
A.B. 1948, The George Washington University — Va.
Hussey, Gerald Quincy
B.S. 1952, The George Washington University — Md.
Hussey, Joseph Bernard
Hutt, Zella M.
A.B. 1954, Eastern Washington College — D.C.
Hutchens
Hutchens, Robert Catterton, Jr.
Hutchens, Thomas Frank — Va.
A.B. 1948, Northeastern University — Va.
Hutcherson, Ira Randolph
B.S. in C.E. 1949, Montana State College — Mont.
Hutchinson, Diane
Hutchinson, Faye Eugene — Md.
Hutchinson, Robert Sayre — Ohio
Hutchinson, Ross H. — Md.
Hutchinson, Hugh Bertram — Va.
Hutchinson, Lawrence Westwood — D.C.
Hutchinson, Wallace Francis — Oreg.
B.S. in M.E. 1942, Colorado Agricultural and Mechanical College — Colo.
Hutchison, Beatrice Lenore
A.B. 1948, Duke Lee — Ohio
Hutchison, Charles Wesley — Mo.
B.S. 1950, Central College
Hutchison, Virginia Lafayette-Jones Institute — Va.
Hutchison, William Wallace — D.C.
A.B. 1951, University of Maryland
Hyatt, Lewis Lemuel — Md.
B.S. 1951, Maryland University
Hyatt, Neal Loretto — D.C.
D.C.

Hyde, George Richard — Idaho
B.S. 1952, Brigham Young University
Hyde, Herbert Kenneth, Jr. — Md.
A.B. 1935, University of Oklahoma
Hyde, Lamon DeLon, Jr. — Utah
A.B. 1954, Brigham Young University
Hyde, Rowland — D.C.
B.S. 1934, University of Maryland
Hyland, Leo Joseph — D.C.
Hyman, David Jay — Md.
B.S. 1952, University of Pennsylvania
LL.B. 1955, Harvard University
Hysell, Lloyd Lamar — Md.

I

Iacangelo, Ralph Pasquale — Md.
B.S. 1948, William Penn College
A.M. in Ed. 1951, The George Washington University
Iacobelli, Angelo John — D.C.
B.S. 1951, The George Washington University
Iannone, Edward — Md.
B.S. in E.E. 1950, Syracuse University
Iannotta, John — Md.
E.E. 1948, Duquesne University
Ed.M. 1954, University of Pittsburgh
Iannuzzi, Guglielmina Elena — D.C.
A.B. 1952, The George Washington University
Iben, Aileen Bernice
Ingalsbee, Harold Edward — Wash.
B.S. 1951, The George Washington University — D.C.
Ider, Vernon Maxwell, Jr.
Ingalsbe, Louis Spencer — Va.
B.S. 1940, University of Toledo — Md.
M.P.H. 1947, University of Michigan
Ilanz, Nicholas Joseph
Ilf, Anita — D.C.
Iglehart, Florence-Claire — D.C.
Ignatiewicz, Justina — Md.
Ihrig, Katherine Anna — D.C.
A.B. 1950, University of Wisconsin — Ohio
A.M. 1952, The George Washington University
Ikar, Norman Sidney
A.B. 1948, University of California at Los Angeles — D.C.
Ikonnikoff, Ivan Vasileff — D.C.
Ilgenfritz, John, Jr. — D.C.
B.S. 1951, LL.D.S. 1954, University of Pittsburgh — Pa.
Imandt, Gertrude Elizabeth — D.C.
Imgaffe, Hamilton Hampton — Md.
Imgaffe, Richard Mulliner — Md.
Imming, Carroll, State — D.C.
Imming, Joseph Raymond — N.C.
B.S. 1948, Davidson College
Imperatrice, Joseph Lamont — Va.
A.B. 1941, University of Kentucky
M.R.E. 1944, Crozier Theological Seminary
Imperiale, Charles Anthony — D.C.
A.B. 1954, The George Washington University
Imus, Edward Lee — Va.
Inderieden, Amy Evelyn — Ind.
A.B. 1918, A.M. 1943, The George Washington University
Ingbretsen, John Marshall — Md.
Ingle, Margaret Catherine — Colo.

Irvine, Alison Gilchrist — D.C.
Irvine, Lyle V[illegible] — D.C.
A.B. 1948, Mount Baldwin College
Irwin, Fred Baird — Md.
Irwin, Lenore Lee — Md.
Irwin, Ruth Anne — Pa.
Irwin, Wilbur Layne — Pa.
B.S. 1951, Grove City College
Isaacs, Leslie Alfred — Md.
Isaacs, Randall Harold — Va.
Isbell, Elizabeth — S.C.
Isgett, Norma Frances — Va.
Isenberg, Lena Clementis — Md.
Isenhart, William Stanley — N.Y.
Ishii, Shigeru — Hawaii
A.B. 1946, A.M. 1949, Ph.D. 1953, University of Illinois
Ishiyama, Kazuo — Va.
B.S. 1951, The George Washington University
Iskander, Margaret — Md.
Iskowitz, Raymond — Md.
B.S. 1953, University of Pittsburgh
Islaer, George H. — D.C.
Dr. Iurid. 1953, University of Zurich, Switzerland
Israel, Vincenza Andrew — Md.
Israel, Thomas Sewell — Va.
A.B. 1952, The George Washington University
Israelson, Orson Allen — Calif.
B.S. 1924, Utah State Agricultural College
M.S. 1947, University of Utah
Issokson, Rhoda Sylvia — D.C.
A.B. 1944, Cornell University
Ittner, Edwin Reuter — Md.
A.B. 1952, The George Washington University
Iverson, Marie F. — D.C.
B.S. 1944, University of South Dakota
Ives, James Clinton — Va.
Iwamoto, David — Hawaii
A.B. 1947, Walla Walla College
A.M. 1948, Seventh Day Adventists Theological Seminary
A.M. 1954, The George Washington University
Izawa, Edward Hitoshi — Hawaii
A.B. 1951, University of Texas
M.S. 1952, University of Hawaii
Izlar, William Henry — Fla.
A.B. 1953, University of North Carolina

J

Jabbour, Sami Khalil — Syria
Jacobsen, Jean Louise — D.C.
Jack, James Archibald — D.C.
Jack, Marie Walter — D.C.
Jack, Paul Simmons, Jr. — N.Y.
A.B. 1951, The George Washington University
Jackanicz, Anthony Frank — N.J.
Jackson, Algernon Weimer — Va.
Jackson, Andrea — Tenn.
A.B. [illegible], A.M. 1954, The George Washington University
Jackson, Audrey — N.J.
B.S. 1942, Ohio State University
Jackson, Barry Wendell — Calif.
A.B. 1942, Stanford University
Jackson, Charles Edgerton, Jr. — Md.
B.S. Engr. 1945, U.S. Naval Academy
B.M.E. 1951, The George Washington University — D.C.
Jackson, Cynthia Elizabeth
B.S. 1945, Miami Teachers College
A.M. 1949, New York University — D.C.
Jackson, David — Ohio
Jackson, Don Cecil
B.S. 1953, Abilene Christian College — Texas
Jackson, Dwight Neal — Ga.
Jackson, Edward William — Ga.
Jackson, Edwin Wilfred — Calif.
A.B. 1950, Occidental College
Jackson, Harold Leo
B.S. 1952, California Institute of Technology — Va.
Jackson, Harold Rodes — Va.
B.S. 1917, U.S. Military Academy
Jackson, Harvey Taylor — D.C.
B.S. in I.E. 1952, University of Maryland
Jackson, Henry — Ohio
B.S. 1950, Howard University
Jackson, James Edwin — D.C.
B.S. 1950, Morgan State College
Jackson, Jesse Hoffman
B.S. 1915, Miami Teachers College — Kans.
A.M. 1949, Columbia University
Jackson, John Norval — Ohio
B.Pet.Engr. 1950, University of Kansas — Ohio
Jackson, John Randolph, Jr. — D.C.
Jackson, Marion T.
B.S. 1940, Miami Teachers College — D.C.
A.M. 1948, New York University — D.C.
Jackson, Mary Patricia — Va.
Jackson, Nancy Lee
Jackson, Nelson Parkyn — Ohio
B.S. 1911, U.S. Military Academy — N.Y.
Jackson, Robert Dennis
Jackson, Robert James, Jr.
B.S. in C.E. 1947, University of Alabama — Ala.
Jackson, Sandra Sue — Ohio
Jackson, Victor Lee — N.C.
Jackson, Wilma Fay Elizabeth
B.S. in Ed. 1939, University of Nebraska — Md.
Jacob, Hiram Clark — D.C.
Jacob, Phyllis Eileen
A.B. 1952, The George Washington University — Md.
Jacobs, Clarence Joseph
A.B. 1940, University of Mississippi — Md.
M.S. 1947, West Virginia University — Md.
Jacobs, Jack LeR.
Jacobs, James Wiley
B.S. 1940, A.M. 1952, The George Washington University — D.C.
Jacobs, Joseph Harry — Va.
Jacobs, Julius — D.C.
B.S. 1[illegible], Shepherd State College
Jacobs, Richard Clair
B.Mus. 1942, Westminster Choir College — D.C.
M.Mus.Ed. 1949, North Texas State College
Jacobs, Stanley Robert — Calif.
A.B. 1951, University of Maryland — N.Y.
Jacobsen, Merriam J. — D.C.
Jacobsen, Ralph
A.B. [illegible], New York University
Jacobson, Bebe Audrey

Jacobson, Raymond Marvin
A.B. 1949, University of Florida
LL.B. 1952, University of Miami — Va
Jacobson, Richard Isaac
A.B. 1956, St. Anselm's College — N.H.
Jacobs, Maclear, Jr. — Conn
A.B. 1951, Trinity College
Jacoby, Charles Herbert — Va
Jacoy, Charles Harry
B.S. 1953, University of Maryland — Md
Jaeger, Harold Edward — Va
A.B. 1950, Western Reserve University
Jaffe, Alexander Stricher — D.C.
Jaffe, Arthur Sidney — Va
A.B. 1954, University of Cincinnati
Jaffe, Edward Lawrence — D.C.
A.B. 1955, The George Washington University
Jager, Elizabeth Rodgers
A.B. 1949, Smith College — D.C.
James, Robert Alfred — Va
James, Frank Robert
James, Richard Julius — Pa.
James, Anna Margaret — Ga.
James, Bette Cornell — W. Va.
A.B. 1952, University of Colorado — Md.
James, Bette Jean
A.B. 1956, Alabama Polytechnic Institute — Va.
James, Fonnie Burrell
James, Henry Prescott — Va.
James, Mary H. — Va.
James, Mary Jane — D.C.
B.S. 1948, Central Michigan College of Education — D.C.
James, Paul Ling
A.B. 1954, Wesleyan University — Conn.
James, Richard Carl
James, Walworth Valentine — Va.
Jamerson, Lee — D.C.
Jamison, Richard Charles — D.C.
Janes, Robert Benjamin — N.J.
Janes, Bernard William — D.C.
A.B. 1953, A.M. 1954, University of Delaware — Del.
Jang, Lan Mei-lehsien
Janney, Wayne Bowers — Va.
Janney, Albert Walter, Jr. — Va.
A.B. 1955, University of Rochester — N.J.
Janowski, Mary Ann
Janssen, Margaretta — Dutch Guiana
Janssen, Rene Reva — D.C.
Jarman, William Lawrence — D.C.
B.S. 1954, Indiana State Teachers College — Ind.
Jarnagin, Victor Harry
A.B. 1952, Sacramento State College — Pa.
Jarvis, Paul Armento — Md.
A.B. 1949, Pennsylvania State University
Jaworski, Leonard Michael
Jayne, Hilton Ann — D.C.
B.S. 1954, Maryland School of Mines — Va.
Jeanes, Jerome Harvey — Va.
Jeanes, Julian Dale — Va.
Jeanes, Mildred Louise — Fla.
A.B. 1953, A.M. 1954, Boston University — N.Y.
Jeffcoat, Campbell Pavel — D.C.
LL.B. 1949, Howard University
Jeffcoat, Campbell, Jr.
B.S. 1951, U.S. Merchant Marine Academy — N.Y.

Jeeves, Isabel Octavia — Mich.
Jefferson, Laura Ellen — Fla.
Jefferson, Lewis Wilson, Jr. — D.C.
Jefferys, Barbara Mary — D.C.
Jeffers, Charles Thomas — Md.
Jeffrey, Peter — Ohio
B.S. 1955, Ohio State University
Jeffries, Shannon Joe
Jenckes, Anne Reade — D.C.
A.B. 1950, Smith College — D.C.
Jenckes, David Greenlee
A.B. 1951, Brown University — R.I.
Jenkins, Henry Bertram — Va.
Jenkins, Mabel Wellauer — Pa.
B.S. 1945, Pennsylvania State Teachers College, East Stroudsburg
Jennings, Bonnie Purnell — Va.
Jennings, James Edwin — D.C.
Jennings, Stanley Noel — Md.
Jennings, Stephen Lester — Md.
A.B. 1953, Clark University
Jennings, Vincent James — Va.
A.B. 1948, Yale University
LL.B. 1952, The George Washington University
Jenson, Wilmer Ward — Utah
B.S. 1954, Brigham Young University
Jennings, William Harmes — Ill.
B.S. 1954, Duke University
Jensen, LeRoy — Md.
B.S. 1951, University of Maryland
Jensen, Mildred Bonadwater — Pa.
Jensen, Randall Hudson — Wis.
B.S. 1948, Superior State College
Jernigan, Frances Caroline — D.C.
Jerome, Joseph Blanchenbe — Va.
Jewelewicz, Jean — N.Y.
Jesse, Elmer Arthur — D.C.
B.S. 1948, University of Pittsburgh
Jessup, Ruth Joseph — R.I.
A.B. 1954, Catholic University of America
Jewett, Robert Anthony — Mass.
Jimenez, Hernando — D.C.
Jingozian, Marianne Gerald — Wash.
B.S. 1952, College of Puget Sound
Jinnett, Robert Hugh — N.Y.
A.B. 1951, Princeton University
Jobbins, Anthony — Pa.
Jobson, William Louis — Va.
B.S. in E.E. 1943, U.S. Naval Academy
Johansen, Willard Woodruff — Idaho
A.B. 1951, Idaho State College
Johnson, Claudia Stone — D.C.
Johnson, Agnes Estelle — D.C.
Johnson, Anna Hall — D.C.
B.S. 1949, Howard University
Johnson, Anne — Va.
Johnson, Anne — Va.
A.B. 1953, University of Alabama
Johnson, Augustus Clark — Va.
A.B. 1948, A.M. 1949, The George Washington University
Johnson, Barbara S.
Johnson, Bertrand Lewis, Jr. — Va.
Johnson, Betty Jane — Md.
Johnson, Carl Richard — D.C.
Johnson, Charles Edgar, Jr. — Md.
Johnson, Charles Upton, Jr. — Va.
B.S. in E.E. 1952, University of Maryland — Md.
Johnson, Chelo Lane — D.C.

Johnson, Clarence Bogle — Tenn.
Johnson, Constantia H — Va.
A.B. 1948, The George Washington University
Johnson, David Marion — W Va.
B.S. 1951, West Virginia State College
Johnson, David Merrill — Md.
Johnson, David Ward — N Y.
B.C.E. 1952, Ohio Northern University
Johnson, Don Robert — Md.
A.B. 1955, Princeton University
Johnson, Doris Ann — D.C.
A.B. 1955, The George Washington University
Johnson, Dorothy Campion — Va.
A.B. 1940, Manchester College
A.M. 1950, Stanford University
Johnson, Edward Page, Jr. — Va.
A.B. 1952, Dartmouth College
Johnson, Edward William — Va.
B.S. 1952, Illinois Institute of Technology
Johnson, Edwin Joseph — D.C.
B.C.S. 1952, Johns Hopkins University
Johnson, Ernest Frederick — Va.
Johnson, Esther Dillingham — D.C.
B.S. 1940, Massachusetts State Teachers College, Framingham
Johnson, Esther Marie — Va.
Johnson, Ethel Dorothy — Va.
Johnson, Eva M. — D.C.
A.B. 1940, A.M. 1951, The George Washington University
Johnson, Florence Beard — D.C.
B.S. 1932, Howard University
A.M. 1938, Columbia University
Johnson, Florence Marie — Nebr.
A.B. 1912, A.M. 1917, University of Nebraska
Johnson, Graham — D.C.
A.B. 1951, Howard University
Johnson, James Theodore — Mont.
A.B. 1955, The George Washington University
Johnson, Janet Wildman — D.C.
A.B. 1951, The George Washington University
Johnson, John Andrew, Jr. — Pa.
B.S. 1954, Grove City College
Johnson, Joseph Edwin — Va.
Johnson, Julia Van Vliet — Va.
B.S. 1951, American University
Johnson, Leticia V — W.Va.
Johnson, Lucille Lomax — D.C.
B.S. 1941, Miner Teachers College
A.M. 1944, University of Chicago
Johnson, Marion Mack — Ala.
A.B. 1930, LL.B. 1933, University of Alabama
Johnson, Marshall Sargent — Va.
A.B. 1914, New York University
Johnson, Mary Boston — Md.
B.S. 1933, Maryland State Teachers College, Bowie
Johnson, Margaret Baldwin — Md.
A.B. 1936, Virginia State College
A.M. 1952, New York University
Johnson, Nanette — Va.
Johnson, Patricia Anne — D.C.
Johnson, Phoebus Jerome — Md.
Johnson, Rhyley Wade — Md.
Johnson, Richard Wamp — Va.
A.B. 1950, University of Virginia
Johnson, Robert Sumner — Pa.
Johnson, Sara Ann — Pa.
Johnson, Thomas Eugene — Pa.
Johnson, Thomas Eugene, Jr. — N.J.
Johnson, Thomas Ogden — Va.
A.B. 1954, Rutgers University
Johnson, Thomas Page — Pa.
Johnson, Thomas R. — Va.
Johnson, Virginia Ann — N.C.
A.B. 1946, DePauw University
Johnson, Walter Warren — Pa.
B.S. 1944, University of North Carolina
Johnson, Wendell Alexander — Mass.
Johnson, Wendie Jean — Pa.
Johnson, William Edward — Pa.
Johnson, William Joseph — Calif.
Johnson, William Joseph — Md.
B.S. 1954, U. S. Naval Academy
Johnson, William Lee — D.C.
Johnston, Carol Lee — Pa.
Johnston, Catherine Faulkner — Va.
B.S. 1940, University of Maryland
Johnston, Dora Jean — Md.
A.B. 1949, The George Washington University
Johnston, George Irwin — Pa.
B.S. 1953, Johns Hopkins University — Md.
Johnston, Josephine Elizabeth
Johnston, Ruth Hall — Va.
B.S. 1955, Johns Hopkins University — D.C.
Johnston, Walter Eugene — Mich.
Johnston, William Drumm III
Johnston, James Bruce — Va.
A.B. 1950, The George Washington University
Joiner, Osceola Cofield
B.S. 1949, Alabama State Teachers College
A.M. 1952, The George Washington University — Va.
Jolin, Robert Farrington — Iowa
Jolley, Jesse, Jr. — W.Va.
B.S. 1948, University of Michigan — Ind.
Jolliffe, Robert Van — Pa.
Jolly, Jesse Gilbert — Iowa
Jolly, Mary — Pa.
Jones, Agnes Beck — Md.
Jones, Annie Dudley — Pa.
Jones, Arthur Bennett — Va.
Jones, Beatrice West — Md.
Jones, Bess Springfield
Jones, Charles Sheely — Md.
B.S. in C.E. 1951, Duke University — Va.
Jones, Charlotte B — Calif.
Jones, Clarence Glenn
Jones, Donald Boone — D.C.
B.S. 1951, University of Maryland — Va.
Jones, Donald Charlestine — Va.
Jones, Donald Eugene — Va.
Jones, Dorothy Lee
Jones, Eddie — Va.
A.B. 1941, Miles College — Va.
Jones, Edward Herbert
Jones, Eileen M — N.Y.
A.B. 1953, San Jose State College
Jones, Frances Xavier — W.Va.
A.B. 1954, Fordham College
Jones, Frank Cox
B.S. 1918, U. S. Naval Academy
M.S. 1943, Massachusetts Institute of Technology

Jones, Frank Pierce Texas
A.B. 1955, The George Washington University
Jones, Gael Vanette
Jones, Helen Stewart Md.
B.S. 1946, Mary Washington College Va.
M.A. 1948, The George Washington University
Jones, Horace Leland, Jr.
Jones, John Hosea D.C.
Jones, John Lee Md.
Jones, John Norville Va.
Jones, John Paul, Jr. Ark.
A.B. 1954, Castleton College Minn.
Jones, Joseph Martin
Jones, Josie Marilyn N.C.
Jones, Lawrence Alan Md.
Jones, Lovelee Va.
Jones, Lucian Kaleda Md.
Jones, Martha Beatrice Va.
B.S. 1955, Mercer Teachers College D.C.
Jones, Martha Sue
Jones, Marvin Lee D.C.
A.B. 1955, San Diego State College D.C.
Jones, Mattie Elliott
Jones, Nancy Spratley La.
Jones, Phillip Henry Va.
Jones, Reese O'Dell Va.
A.B. 1954, Randolph-Macon College Va.
Jones, Robert Arthur
Jones, Robert Astley Va.
Jones, Robert Blair Va.
Jones, Robert Howard Texas
A.B. 1950, The George Washington University Va.
Jones, Robert Lee
Jones, Thomas Hugh Md.
B.S. in C.E. 1952, Michigan College of Mining and Technology Va.
Jones, Virginia Logan
A.B. 1947, Cornell University Va.
Jones, Walter Severn
Jones, William Madison D.C.
Jones, William Howard Va.
Jones, William Pinckney
B.S. 1954, U.S. Naval Academy Md.
Jones, Montgomery Rustard
Jones, Henry Ford D.C.
Jones, Richard Nelson D.C.
Jones, [illegible] N.C.
B.S. 1928, U.S. Naval Academy
Jordan, Clarence Jeanette
Jordan, Harold Borland Va.
Jordan, John S. Va.
Jorgensen, Wilhelm D.C.
B.S. 1952, Ph.D. 1957, University of Va.
Wisconsin
Joseph, Robert Charles
Joseph, Rogers Lawrence Md.
Joseph, [illegible] Pa.
A.B. [illegible], The George Washington Md.
University Va.
Joseph, [illegible]
B.S. 1954, University of Idaho Colo.
Joseph, Howard
Joseph, Howard Lawrence D.C.
A.B. 1949, LL.B. 1952, University of D.C.
Washington
Joyce, Eugene H.
Joyce, Leo Donald
Joyce, Mary Jane D.C.
Joyce, Robert J. Md.
A.B. 1954, Davis and Elkins College D.C.
Pa.

Judd, Dean Barrett Md.
A.B. 1955, The George Washington University
Judd, Kenneth C. Va.
Judd, Lewis Lund Calif.
B.S. 1948, University of Utah
Judge, James Patrick Md.
B.S. 1941, University of Scranton
Judge, John Cotter N.Y.
B.S. 1954, Union College
Judge, Sally Lamme N.Y.
Judge, Stephen Ralph N.Y.
Judson, Humphreys Francis, Jr. Conn.
Judson, Robert Russell Va.
A.B. 1951, A.M. 1955, University of Illinois
Judy, William Raines W.Va.
B.S. in E.A. 1953, Fairmont State College
Julian, Andrew Richard Md.
B.S. in M.E. 1949, University of Buffalo
Julin, Daniel Siegel D.C.
Julian, Alexander Va.
B.S. 1914, U.S. Naval Academy
M.S. 1923, Massachusetts Institute of Technology
Julian, Otis Kenneth D.C.
A.B. 1926, Franklin University
Jura, Joseph Carl, Jr. Ohio
Jurgensen, Walter Pa.
Jurgensen, Inge D.C.
Jurkin, Stephen, Jr. Va.
B.S. 1951, U.S. Naval Academy
Justice, Alfred Steele Va.
Justice, Bernard William Va.
B.E.E. 1951, Catholic University of America
Justus, A. Christine Texas
B.S. 1950, Texas State College for Women
Juteau, Arthur Gerard N.H.
Juvaden, Patricia Jane D.C.

K

Kabes, Lilian Eszter Md.
B.S. 1951, American University
Kabes, Vladimir E. Va.
LL.D. 1934, Charles University, Prague
Kabisovich, Martha Marie D.C.
Kabisch, Dietmar, Jr. Va.
A.B. 1952, The George Washington University
Kaczmar, Mildred, Jr. Pa.
Kadel, Sara Baumgartner D.C.
Kadlecovec, Richard Allen Pa.
B.S. 1952, Franklin and Marshall College
Kahn, Howard Lewis Fla.
A.B. 1954, University of Miami
Kahn, Douglas Allen N.C.
A.B. 1951, L.L. University of North Carolina
Kahn, Florence Lorraine Va.
A.B. 1948, Indiana University
Kahn, Henry Harold, Jr. Texas
Kahn, [illegible] D.C.
Kahn, Malcolm Joseph Va.
A.M. 1951, Harvard University
Kahn, Joseph D.C.
B.S. in E.E. 1952, B.E.E. 1954, Johns Hopkins University
Kaiser, Jesse Albert D.C.

Kaiser, Richard Glenn — Md
B.Arch.Eng. 1949, Catholic University of America

Kaltsas, James George — D.C.

Kalvachieff, Ignat Vassilef — Md.

Kalwaic, Robert Eugene — N.D.

Kalyn, Andrew Charles — Pa.

Kamen, Ira — D.C.

Kamin, Charles Robert — D.C.

Kamish, Robert Paul — D.C.
A.B. 1955, The George Washington University

Kamlmyer, Roy Leslie — Md.

Kamman, Benjamin — Md.

Kamsky, Lucas — D.C.

Kamstra, Stan — D.C.

Kamuf, Layant — D.C.

Kamunetzky, Jerry — D.C.

Kanaszky, Marguette Janice — D.C.

Kanavel, Esther E. — Va.
A.B. 1935, Hunter College

Kanavel, Henry Edward — D.C.

Kanavel, Michael G. — D.C.

Kanavelsky, Carolyn Ruth — D.C.

Kanavel, Gwenyth — D.C.
B.S. 1942, University of Illinois

Kanavel, Bernard Frederick — Md.

Kane, Elaine Frances — Iowa
B.S. 1952, Wilson Teachers College

Kane, Harold Edwin — Conn.

Kane, John Francis — Md.

Kane, John Michael — Ill.

Kane, Regina Ellen — Va.

Kane, Thomas John — N.Y.
A.B. 1948, Cornell University

Kang, Ik Kap — Korea

Kann, Lawrence — D.C.

Kann, Norman R. — D.C.

Kanne, Bruce Neal — D.C.

Kannowski, Chamnean — D.C.
LL.B. 1950, Thammasat University, Thailand

Kanter, Irving Monroe — Mass.
B.S. in F.S. 1952, Georgetown University

Kantner, Frank James, Jr. — Ohio

Kaplan, George — D.C.

Kaplan, Harry — Ill.
A.B. 1948, A.M. 1952, The George Washington University

Kaplan, Jerome Lawrence — Ind.

Kaplan, William George — D.C.

Kap, Edward George — Ohio

Kapnison, Nicholas Demetrious — Va.
B.E.E. 1951, The George Washington University

Kapnolfman, Gheorghe — D.C.

Kapnick, Stanley Edward — D.C.

Kappler, Farrell James — Va.
B.S. 1954, Pennsylvania State University

Kapsalakis, Konstantinos — D.C.
B.C.E. 1951, The George Washington University

Kapsis, John Nick — D.C.
B.S. 1954, The George Washington University

Karl, William Clement — D.C.
B.S. 1951, University of Notre Dame
A.M. 1954, New York University

Karlsen, George Edward — Va.

Karlsen, Robert Emil — D.C.
A.B. 1948, College of William and Mary

Karlsson, Hordur — D.C.

Karmann, Charlotte Norma — Ill.

Karp, Jeanette
A.B. 1951, The George Washington University

Karsten, LaVerne Opal — Va.

Karstens, Ruth Flora — Mass.

Kartalian, Pauline
A.B. 1947, University of Vermont — D.C.

Kas, Helen Norma — D.C.

Kasabian, Peter Joseph — D.C.

Kase, Francis Joseph
LL.D. 1954, Charles University, Prague
A.M. 1948, Free School of Political Science, Prague — Hawaii

Kashiwa, Herbert Kaoru
B.S. 1950, University of Hawaii
M.S. 1954, The George Washington University — Hawaii

Kashkin, Emma Ann — Md.

Kasney, Paul — N.Y.

Kasnow, Hilda — D.C.

Kassner, Leonore — Va.

Kassof, Nelson — W.Va.

Kast, Darrell Dee — Md.
A.B. 1951, West Virginia University

Kastanis, Michael Thomas — Hawaii

Kastanis, Beatrice Mahoney
A.B. 1951, University of Hawaii — Md.

Kasuk, Anne Stark — Md.
A.B. 1931, University of Illinois

Kate, Elaine Kennedy

Kate, Lucinda Bennett — D.C.
B.S. 1950, University of Maryland — N.Y.

Kate, Marvin Hussey

Kate, Norman Frederick — N.J.
B.S. 1949, U. S. Military Academy

Katenian, Stanley — D.C.
A.B. 1954, Bridgewater College — Va.

Kathman, Albert Gerard — Md.

Katholos, Demetrios

Katsham, Richard Miles — Indo.
A.B. 1948, The George Washington University

Katz, Narinder
A.B. 1946, Delhi University
A.M. 1948, Punjab University — D.C.
M.S. 1954, Southwest College — Va.

Katzenbach, Gerhard — D.C.

Katzenbach, Neils Haering — Va.

Katzenbach, Sergeko — D.C.

Katz, Alan — Md.

Katz, Marjorie Stanley

Katz, Isabelle Bernstein
A.B. 1943, University of California, Los Angeles

A.M. 1950, The George Washington University — Md.

Katz, John
B.S. 1948, M.S. in M.E. 1948, California Institute of Technology — N.D.

Katz, Robert Adolph
A.B. 1948, A.M. 1950, The George Washington University — W.Va.

Kaufelt, Donald William — Va.

Kaufman, Gerald — D.C.

Kaufman, Kay Jane

Kaufmann, Carol Francis
B.S. in Ed. 1945, Wayne University — Va.

Kaufmann, Harold Benjamin
A.B. 1943, Wayne University — Mass.

Kaus, Caroline Elizabeth

Kearney, Kathleen Mary Md.
Kearney, Julia Lawrence
A.B. 1951, Boston College Mass.
Kearney, Mary Dolores
A.B. 1951, The George Washington University D.C.
Kearney, Mary Lane
Kearney, Edward William Md.
B.S. in Ed. 1948, Temple University Pa.
A.M. in Ed. 1951, The Graduate School, Washington University
Kearney, William Henry
Kearney, Eugene D.C.
Kearney, Robert Va.
Kearney, Warner James Md.
Kearney, Cecelia Rosalind D.C.
B.S. 1951, Mount Ida Junior College
Kearns, Mary Jane, Dunmore College D.C.
Kearns, Leonard Sloan Va.
Kearns, James Peter D.C.
Kearns, William Elmer D.C.
Kearney, William Dixie Pa.
Kearney, Rose Frances, Jr. Va.
Kearney, Anne Lynnette D.C.
Kearney, Dorothy Beam Md.
Kearney, William Lee N.C.
Keating, Grayce Porter N.C.
B.S. in E.E. 1950, M.S. in E.E. 1951, University of Virginia Va.
Kebbe, Frances Louise
B.S. 1951, University of Maryland Conn.
Keene, Rosemary
A.B. 1951, Mount St. Mary's College N.H.
Kehoe, Edmund James D.C.
Keiser, George Edward D.C.
Keiser, James Patrick D.C.
Keister, Alfred Rosenwald, Jr. Va.
Keister, Hadley Montague D.C.
B.S. 1951, U.S. Naval Academy N.J.
Keith, Hilliard Charles, Jr. D.C.
Keith, Leslie Ann Elizabeth
B.S. 1951, University of Maryland Md.
Keller, Robert Morris
Keller, Rosemary Barnes Va.
A.B. 1951, St. Michael's College Mass.
Keller, William Charles, U.S. Naval Academy Mich.
A.B. 1951, The George Washington University Pa.
LL.B. 1951, Georgetown University
Kelley, Hilary Adelaide
Kelley, Paul Charles Texas
Kelley, Ann Frances Va.
B.S. 1951, University of Miami Md.
Kelley, Mary Margaret
B.S. 1951, Western Teachers College Pa.
Kelley, Richard Allen
B.S. 1951, U.S. Merchant Marine Academy N.Y.
Kelley, Charles Lane
Kelley, Charles Vincent, Jr. Md.
Kelley, Frances Rogers College Va.
Kelley, Constance Anne
B.S. in Nursing, Columbia D.C.
1951, Pennsylvania State Teachers Md.
A.M. in Ed. 1951, The George Washington University
Kelly, Elizabeth Anne
Kelly, Elizabeth Cecelia D.C.
Pa.

Kelly, James Dillard Mich.
B.B.A. 1948, M.B.A. 1950, University of Michigan
Kelly, Edward Leonard D.C.
Kelly, Francis Joseph Md.
Kelly, Gerald Edward Md.
Kelly, Mary Elizabeth N.Y.
Kelly, Mary Patricia D.C.
B.S. 1951, Trinity College
Kelly, James Francis D.C.
Kelly, Mary Rachael Va.
Kelly, Patricia Rachael Va.
Kelly, Joseph Michael
B.S.F.S. 1951, Georgetown University
Kelly, Marjorie Md.
B.S. in E.E. 1947, A.M. 1948, Columbia University
Kelly, Margaret Margaret Pa.
Kelly, Ralph F. Mass.
Kelly, Robert Charles D.C.
Kelly, Kathleen Winifred Mass.
Kelly, Thomas J. Va.
Kelman, Norman Allen D.C.
Hon. G. 1950, B.S. 1946, University of Maryland
Kelsall, Anne Nottingham D.C.
A.B. 1951, Cedar Crest College
Kemmel, Thomas D.C.
B.S. 1951, Muhlenberg College
Kemper, David Va.
A.B. 1951, University of Rochester
Kemper, Jane Ridgely Md.
B.S.E. 1947, M.S.E. 1949, University of Michigan
Kenny, James Francis Utah
A.B. 1949, University of Utah
Kenny, Karl Richard Md.
Kenny, Robert Martin Va.
B.S. 1951, University of Maryland
Kenny, Ellen Grace N.Y.
A.B. 1951, Cornell University
Kenny, James Stephen Ohio
Kensell, Harold William Md.
Kensler, Andrew Francis Mass.
Kensler, Marcel Louis, Jr. Va.
Kensler, Mary Josephine Md.
A.B. 1951, University of Notre Dame, Columbia
Kendall, Ralph St. Clair Pa.
B.S. 1951, Pennsylvania State University
Kendrick, Elizabeth Ridley N.C.
A.B. 1951, Greensboro College
Kendrick, Jordan Morris Va.
Kendrick, Lawrence Lord D.C.
Kendrick, Warren Va.
A.B. 1951, University of Virginia
Kenney, Richard Emmett, Jr. Mo.
Kennard, George Stanley Md.
Kennedy, Francis Edward Iowa
Kennedy, Henry Jarvis Va.
Kennedy, Joseph Wesley Kans.
B.S. 1951, Mt. Hermon College
Kennedy, Mary Frances N.C.
A.B. 1951, University of North Carolina
Kennedy, Mary Kent Conn.
A.B. 1951, Vassar College
Kennedy, Philip Dale Va.
Kennedy, Richard Semple Va.
B.S. in E.E. 1951, University of Kansas
Kennedy, Theodore Conrad S.C.
A.B. 1951, The Citadel
M.S. in E.E. 1951, Columbia University
Kennedy, Vincent Evelyn N.J.

Kennelly, Cletus Wright II — Mich.
B.S. 1945, U. S. Naval Academy
Kennette, Mary Catherine — Va.
B.S. in Ed. 1951, Madison College
Kent, Albert Kenneth — Calif.
A.B. 1934, University of California
Kent, Beverly Jane — D.C.
Kent, Charles H. — N.Y.
Kent, Charles Harry — Va.
Kent, Ila Meyer — D.C.
Kenyon, Randall Charles — Va.
Kepler, John Zehner — Va.
B.S. 1949, Northwestern University
Kerckhoff, John Drew — Mo.
B.S. 1948, St. Louis University
Kerenovitch, Konstantin Dimitroff — D.C.
Kerenyi, Vito Angelo — D.C.
Kerle, Robert Harvey — N.Y.
B.B.A. 1935, College of the City of New York
Kern, Jean Adele — D.C.
Kerr, Jerome — Md.
B.S. 1950, Brooklyn College
M.S. 1953, Ohio State University
Kern, Marion Lorrain — Md.
B.S. in Ed. 1951, University of Pennsylvania
Kern, Reed DeTemple — Va.
Kern, Tempie Christine — D.C.
Kern, Thomas Francis — D.C.
B.S. 1945, U.S. Military Academy
Kerns, Mary Enama — W Va.
Kerns, Ross Neil — Md.
Kerr, David Renwick — Va.
A.B. 1914, Columbia University
A.M. 1932, The George Washington University
Kerr, Jean Louth, Jr. — Ind.
B.B.A. 1954, University of Pittsburgh
Kerr, Linda Katharine — Va.
Kerr, Norman Joseph — R.I.
Ed.B. 1951, Rhode Island College of Education
Kerr, Robert Hugh — Va.
Kerr, Smith Peter — Va.
Kerwin, Julianna Ella — D.C.
Kerwin, Timothy Daniel — Md.
B.S. 1950, Randolph-Macon College
Kesakomol, Amnuay — Thailand
LL.B. 1949, University of Thammasat
Kessek, Jack Edward — Pa.
Kesner, Irving Carl — Va.
Kessler, Dan Peck — W Va.
Kessell, Edward Rathwell — Ohio
Kessler, John Tevlin — D.C.
Kessler, Marilyn Faye — D.C.
Kewalramani, Motilram Fatehchand — N.Y.
A.B. 1934, University of Delhi
Kewer, Helen Clare — Md.
B.S. 1942, University of Oklahoma
A.M. 1943, Ohio State University
Keys, Zella Cox — Va.
A.B. 1934, The George Washington University
Keyser, Rosalie Marcia — Va.
A.B. 1954, The George Washington University
Keyser, Samuel Jay — D.C.
Khan, Iqbal-Ullah — D.C.
Khalil, Fadhel — D.C.
A.B. 1951, Higher Teacher's College, Iraq
Khalil, Sadi — D.C.
A.B. 1941, American University of Beirut
Khalil, Sabri — D.C.
A.B. 1951, Law College of Baghdad, Iraq
Khan, Hakim I — D.C.
A.B. 1942, Lucknow University, India
A.M. 1951, Columbia University
Khan, Josephine George — Md.
Khan, Muhammad Salim — Pakistan
A.B. 1947, University of Punjab, Lahore
Khandegar, Angela — Calif.
Khan, Donald Allen — D.C.
A.B. 1951, Howard University
Kidd, Edward Stanley, Jr. — Va.
Kidwell, Edward Milton — Va.
Kiepe, Werner Wilhelm — Utah
B.S. 1942, University of Utah
Kiesse, Robert Rudolf — Va.
B.S. 1950, Bucknell University
Kiernan, Donald McKinley — Mass.
A.B. 1934, William Jewell College
Kiess, Veronica — D.C.
Kilbride, Malcolm James — Va.
Kilcoyne, James Edward — D.C.
Kilcoyne, Martha Faye — D.C.
Kilgore, Robert Martin — D.C.
B.S. 1947, Georgetown University
LL.B. 1952, The George Washington University
Killeen, Rutland Beaman, Jr. — Fla.
A.B. 1935, Duke University
Killip, Gerald Eugene — Va.
A.B. 1951, Louisiana Polytechnic Institute
Kim, Anne Whang — D.C.
Kim, Chang Hoon — Korea
Kim, Duck Jae — Korea
Kim, Hae Ho Hyang — Korea
Kim, Hae Cho — Korea
A.B. 1950, Chosen Christian University, Seoul, Korea
Kim, Hi Ae — Korea
Kim, Hoang, Han — D.C.
LL.B. 1949, Seoul University
M.C.L. 1954, LL.M. 1955, The George Washington University
Kim, John Taihoon — Korea
Kim, Mary Hyun Sook — Korea
Kim, Mun Ho — Ga.
Kim, Yungki — Pa.
Kimball, Billie Jo — Va.
Kimball, Carolyn Lois — D.C.
Kimball, Bruce Kierce — D.C.
B.S. 1954, University of Maryland
Kimble, Howard Fred — D.C.
Kimmelberg, Richard William — Japan
Kinard, Ada Rose — D.C.
B.S. 1948, University of Missouri
Kincaid, Yancey — R.I.
Kincaid, Jack William — Va.
Kinder, Marilyn D. — D.C.
Kinder, Robert Samuel Lufberry — D.C.
A.B. 1951, Brown University
Kindleman, Eugene John — Md.
B.S. 1951, University of Illinois
LL.B. 1954, The George Washington University
King, Alexander — Va.
King, Algernon Sidney — Conn.
King, Anthony — D.C.
A.B. 1951, Williams College

King, Clifford Walker D.C.
A.B. 1951, University of Georgia
King, Edward Mark Va
King, Elvina Frances N.Y.
A.B. 1954, The George Washington University
King, Ernest Lee
King, Ethel Virginia Anne D.C.
King, George Morgan Md.
King, George Parrish Md.
King, Geraldine Elizabeth Fla.
King, Gertrude Md.
King, Janet Leake D.C.
A.B. 1931, Winthrop College Va.
A.M. 1932, University of South Carolina
King, Jerome Henry, Jr. Va.
B.E. 1941, Yale University
M.S. 1951, Massachusetts Institute of Technology
King, Joan Story
King, Joe Lee Va.
King, John Ala.
LL.B. 1953, University of Miami D.C.
King, John, Mortimer Md.
A.B. 1929, Central College
A.M. 1935, University of Oklahoma
King, Katherine Ann
King, Lewis Joseph Md.
King, Louis Nathaniel D.C.
B.S. 1946, U. S. Naval Academy Calif.
King, Mildred C.
B.S. 1956, Central College Md.
King, Phyllis Mardel
A.B. 1951, University of Minnesota D.C.
King, Randall C.
King, Robert Edgar Va.
A.B. 1947, West Virginia University Md.
A.M. 1948, New York University
King, Ronald Douglas N.Y.
King, [illegible] L.
King, William Edward S.C.
King, William Houston Va.
B.S. in E.E. 1956, University of Kentucky D.C.
Kingdon, Thomas Paul Ky.
Kingman, Virgil Morris D.C.
A.B. 1953, Kansas State Teachers College Kans.
Kingsley, George Espey Ridgeway II
Kingsley, Richard Kazno Fla.
Kingsley, John Joseph D.C.
Kingsley, Ronald D.C.
B.S. in F.S. 1955, Georgetown University Del.
Kingsley, Irene Barbara Va.
Kingsley, William Allan
Kingsley, Donald Peter Md.
B.C.E. 1950, The George Washington University Fla.
Kingsley, Robert Taylor Va.
B.S. in E.E. 1952, Iowa State College
Kingsley, Lee Linden Ill.
Kingsley, George Anthony
A.B. 1954, University of Illinois Md.
Kingsley, James Robert N.Y.
B.S. in E.E. 1953, Wilson Teachers College Ill.
Kingsley, Joseph D.C.
Kingsley, Ronnie Dewey
A.B. 1951, Lynchburg College Md.
Kingsley, Elizabeth Anne Va.
A.B. 1955, Wayne University Mich.
Kirk, Mary Louise Wis.
Kirk, Richard D.C.
B.S. 1952, University of Maryland
Kirkbride, Virginia Randolph D.C.
B.S. 1941, A.M. 1942, University of Nebraska
Kirkendall, Guy Richard Va.
A.B. 1953, A.M. 1954, University of Vermont
Kirkland, Patrice A. Va.
Kirkland, Robert Carey Va.
Kirkpatrick, Donald Lee D.C.
Kirsley, Peter Herbert Md.
Kirshbaum, Frances Mason D.C.
Kitson, Stanley Marion D.C.
A.B. 1953, The George Washington University
Kirwin, James Joseph III Md.
Kish, William Yakim N.J.
B.S. 1954, Dickinson College
Kitchen, Lura Belle Calif.
A.B. 1951, University of Oregon
LL.B. 1957, Northwestern College of Law
Kitsoulis, Michael Thomas D.C.
A.B. 1954, The George Washington University
Kitts, Richard Arnold Pa.
A.B. 1953, Gettysburg College
Kitzmiller, Howard Lancaster Pa.
A.B. 1951, LL.B. 1954, Dickinson College
Kizler, John Willis Texas
B.S. 1948, Northwestern University
A.M. 1953, The George Washington University
Klahre, Norma Aleda D.C.
Klatt, Charles Howard N.Y.
A.B. 1954, Syracuse University
Klatt, Glenys Marie D.C.
A.B. 1956, The George Washington University
Klavan, Anne Usher N.Y.
A.B. 1948, Yale University
Klatt, Charles Arthur Md.
B.S. 1954, Johns Hopkins University
Klavan, Elsie D.C.
B.S. 1947, Johns Hopkins University
Klawans, Michael Stanislaw D.C.
Klay, Andrew Stanley Ill.
B.S. in C.E. 1955, University of Illinois
Kleckner, Ansel Md.
B.S. 1950, Ohio State University
Klein, Charles Nicholas Va.
Klein, Ernest Joseph D.C.
Klein, George Felix N.Y.
Klein, Hortense Julia D.C.
Klein, Irene Beverly D.C.
B.S. 1954, Wilson Teachers College
Klein, LeRoy Nebr.
A.B. 1942, University of Nebraska
M.S. 1954, Columbia University
Klein, Marcia Va.
B.S. 1954, The George Washington University
Kleinschmidt, John Francis Md.
Kleinschmidt, Joseph James Md.
B.S. 1954, Georgetown University
Klemm, Dolores Marchew N.Y.
Klemm, Valerie Anne D.C.
A.B. 1949, Bridgeton Young University
Klemmund, Howard Theodore Conn.
Klein, Phillip Dundee Va.

Klinck, Florence Noble — Md
A.B. 1924, A.M. in Spanish 1931, Mt. Holyoke College
A.M. in French 1928, Columbia University

Kline, Edward Samuel — Va
A.B. 1948, University of Pennsylvania

Kline, Ira — Md.
B.S. 1948, American University
M.S. 1950, The George Washington University

Kline, Peter Lee — D.C.

Kline, Raymond Adam — Pa.
A.B. 1950, Lebanon Valley College

Kline, Richard Gruver — Md
A.B. 1962, Harvard University

Kline, Thomas Clayton — Va.

Klinenberg, James Robert — Md.
A.B., A.M. 1955, Johns Hopkins University

Kling, John Robert — Va.
B. of Mar. E. 1935, State University of New York Maritime College

Klotz, Ambrose — Ill.
B.S. 1953, University of Maryland

Klotzfeld, Gustave Jacob — Md
Kn[illegible], Robert E[illegible] — Pa
A.B. 1951, Pennsylvania State University
Kn[illegible], Julius Henry — D.C.
B.S. 1951, Kent State University
Knebl, Fermo Marcia — D.C.
Knee, Russell Lester — Md.
Knegler, Chester Raymond — Va.
B.S. in E.E. 1940, University of Utah
Knegler, Gerard Lovell, Jr. — Va.
B.S. in E.E. 1947, Purdue University
Knepper, Katherine Hennessey — D.C.
A.B. 1953, The George Washington University
Knepper, Mark Davidson III — Va.
A.B. 1951, The George Washington University
Knerr, Ruth — Fla.
B.S. 1958, Florida State University
Knetzing, Helen Elizabeth — Maine
Knight, Samuel Rupe, Jr. — Md.
Knight, Lucy Jones — Va.
B.S. 1953, Iowa State College
Kniser, Howard — Va.
B.S. 1950, Indiana Technical College
Knopp, Edna — N.Y.
A.B. 1935, Brooklyn College
Knowles, Edward Andrew — Ill.
Knowlton, Richard W — Kans.
B.S. 1951, Kansas State College
Knott, Florence Marie — D.C.
Knowles, Elizabeth Sealy — Md.
Knowles, Robert Clinton — D.C.
Knox, Charlotte Hess — D.C.
B.S. 1924, Temple University
A.B. 1930, A.M. 1931, The George Washington University
Knox, David Karwin — Va.
Knuck, Mona Simmons — Va.
Kobet, Henry Frank — D.C.
Kobrinski, Marian — Va.
Koch, Alice Roberta — Md.
A.B. 1924, University of Illinois
A.M. 1927, The George Washington University
Koch, Charles Frederick — N.Y.
B.S. 1951, Union College

Koch, Stanley Allan — D.C.
Koch, Ursula Herbert — Md.
B.S. 1955, Webb Institute
Koch-H. Arthur — Mass.
Kocker, Jessie — Va.
Kocourek, Jan — Pa.
Kodrowski, Dorothy Elizabeth — Pa.
Koegler, Dorothy Helen — D.C.
Koehl, William Frederick — Md.
B.S. 1951, University of Wisconsin
Koehler, John Henry — Va.
B.S. 1953, New York University
Koehler, James Frederick — Calif.
A.B. 1949, University of California at Los Angeles
Koehler, Walter Josef — Germany
B.S. in F.S. 1954, Georgetown University
Koepp, Vera Sargent — Va.
A.A. 1936, Lindenwood College
A.M. 1945, The George Washington University
Koerber, Nancy — Va.
Koerner, Paul Erwin — Pa.
Koerner, Louise Margaret — Md.
A.B. 1954, Montclair State College
Koerner, Richard Marie — D.C.
Koerte, Thomas Henry — Md.
Koerte, Eva Maria — D.C.
Koff, Ruby W — D.C.
Koffenberger, Jeanette Lochrane — D.C.
A.B. 1927, Hunter College
Kofler, Leopold — D.C.
Kofoid, Melvin Lester — Md.
A.B. 1948, Ph.D. 1952, Cornell University
Kofoid, Donald Allen — Md.
Kofoid, Ruth Burns — Va.
A.B. 1932, The George Washington University
Kofoid, Homer — Ill.
Kofoid, Helen — W. Va.
Kofoid, Grace Beste — Va.
Kofoid, Nora Alexander — Va.
A.B. 1923, Mt. Holyoke College
A.M. 1925, The George Washington University
Kofoid, Charles — Wis.
A.B. 1924, New York University
Kofoid, Arthur Alfred — Ill.
M.S. 1934, University of Wisconsin
Kofoid, Evelyn — N.Y.
Kofoid, Donald — Va.
Kofoid, William Allen — Va.
Kofoid, Barbara Jean — Va.
Kofoid, Dorothy Anthony — Va.
Kofoid, Gerard Hill — Va.
A.B. 1950, The George Washington University
Kofoid, Theresa Donovan — Md.
Kofoid, Lawrence Mae — Va.
Kofoid, John Thomas — D.C.
Kofoid, Mary Lou — Va.
Kofoid, Alfred Carl Hermann — Ill.
Kofoid, Ewald Henry — Va.
A.B. 1930, Guilford College
Kofoid, Carol Gunnerud — Va.
Kofoid, Henry Ludwig — D.C.
B.S. 1949, Massachusetts Institute of Technology
Kofoid, Mona Leah — Va.
Kofoid, Nicholas Charles — Va.

Korb, Louis David Md
A.B. 1952, Boston University
A.M. 1952, Boston University
Korte, Edward V.
Kost, James Leroy Pa.
Kost, Alexander Va.
Kott, Charles William N.Y.
B.S. in C.E. 1954, University of South Carolina Va.
Kotz, Eugene Ierell
Kouchakdjian, Vivian D.C.
A.B. 1952, The George Washington University D.C.
Koumoutsos, Ares
Kourmouzis, Gregor John, Jr. N.J.
Kovacs, Les Stanley D.C.
B.S. 1952, University of Idaho Maine
Kovalcik, Wanda Susan
B.S. 1949, Northeastern University Va.
Kovas, David Thomas
Kovas, Mary Patricia Va.
Kovatch, Alexander Md.
B.S. 1948, University of California at Los Angeles Calif.
Kovik, Anne Laverne
B.S. 1953, Western Michigan College Va.
Kovis, Lewis Rosario
Kovner, Robert James Md.
Kowgios, Karl Lawrence Va.
A.B. 1948, B.Mus. 1949, Baldwin-Wallace College Ohio
A.M. 1950, Columbia University
Kowitz, Leon
Kozak, Robert Joseph D.C.
Kozak, William Robert D.C.
A.B. 1950, A.M. 1951, University of Maryland Md.
Kozak, Stephen J.
B.S. in E.E. 1951, Temple University D.C.
Kozak, Walter Adolf
Kozak, George Louis Md.
A.B. 1952, The George Washington University D.C.
Kozak, Howard John
Kozakiewicz, Horace N.J.
A.B. 1950, University of Panama Panama
A.B. 1952, The George Washington University D.C.
Kozar, Edward
B.S. 1953, Georgetown College Columbia
Kozar, Stephen Charles, Jr. D.C.
Kozar, William, Charles
Kozar, Norman Louis Maine
B.S. in Ed., Art Major D.C.
A.M. 1954, Louisiana State University D.C.
Kozar, Lawrence Illinois
Kozar, Thomas Edward
A.B. 1953, Georgetown College
Kozar, Thomas Joseph, Jr. Pa.
A.B. 1953, The George Washington University
Kozar, Edward William
Kozar, Mary Ann
Kozar, Rose Stasil N.J.
Kozar, Edward Peter Md.
Kozar, Stephen Joseph D.C.
Kozar, Thomas Joseph N.J.
Kozar, Thomas Joseph Md.
Kozar, Thomas Andrew
Kozar, Norman Richard
Kozar, Lee D.C.
M.D. 1953, University of Vermont Va.
D.C.

Krakower, Morris Ira D.C.
Kramer, Andrew Jerome Calif.
B.S. 1952, Loyola University of Los Angeles
Kramer, George Baltzar Md.
A.B. 1951, Rutgers University
Kramer, Jessie A. D.C.
Kramer, Manuel Louis D.C.
Kramer, Robert Va.
Kramish, Arnold Morris Colo.
A.B. 1940, A.M. 1949, University of Denver
Diploma, Languages 1948, University of Geneva
Krantzler, Ronald Joseph D.C.
Krasnow, Howard Bruce D.C.
Krause, William Stephen Va.
B.S. 1941, A.M. 1944, Columbia University
Ph.D. 1954, University of Vienna
Krause, Ellen Elizabeth D.C.
Krause, Emanuel Joseph Md.
Krause, Stephen Victor Va.
Krause, Erwin Jay N.Y.
Krause, Marshall Arnold D.C.
A.B. 1952, Drew University
Krause, Margaret Ellen N.Y.
Krause, Joseph William Ill.
B.S. 1942, Georgetown University
Krawchuk, Sarah D.C.
Krehbiel, Warner Va.
Kreidman, Irene Mercedes N.J.
Kreinheder, Robert Eastman Md.
Kreiner, Faye Va.
Kreiss, Lester Claude Va.
Kreiter, Frances Ann D.C.
B.S. 1951, Williams Teachers College
Kreitzberg, Joshua H. Md.
B.S.E. 1954, College of the City of New York
Kress, Kasler D.C.
Kress, William Jerome D.C.
Kreuger, Hermann Irwin Va.
B.B.A. 1951, College of the City of New York
Kreutzer, Annie Berta France
Kreutzfeldt, Johanna Gertrude France
A.B. 1947, Academie of Paris, France
B.S. 1950, School of Interpreters, Paris, France
Krichels, Anthony Joseph D.C.
Krikorian, Clarence Joseph Va.
Krikorian, Hampton D.C.
Krimbalian, Thomas Edward Mich.
B.S.E. 1952, University of Michigan
Krimer, Paul Columbus Texas
B.Ch.E. 1948, University of Texas
Krischand, Arthur Stark Md.
Krisnit, Kenneth Monmouth Va.
A.B. 1950, Marshall-Wythe College
Krisnik, Robert Hammerman Mass.
A.B. 1952, University of Massachusetts
Kriss, Frank Le Roy Idaho
A.B. 1949, LL.B. 1952, University of Utah
LL.M. 1954, The George Washington University
Kristensen, Oscar Emil Va.
Kristoff, Florence Rose Ohio
Kristoff, Norbert N.Y.
Kritzer, Allen Joseph D.C.
B.S. 1954, Wilson Teachers College

Krouse, Myrna Ruth — W.Va.
Krovnickas, Irena Aldona — D.C.
Krug, James Adele — Md.
Krull, Charles Daniel — D.C.
Ku, Hsien Hsiang — D.C.
M.S. 1951, Purdue University
Kuch, Bailin Lewis — N.Y.
B.S. 1933, Brooklyn Polytechnic Institute
Kuchera, Thomas John — N.D.
A.B. 1951, College of St. Thomas
Kuchler, Richard Von Fitz — Md.
Kuehner, Edwin Charles — Va.
B.S. 1951, Moravian College
Kuemmerling, Ted Denise — Va.
A.B. 1957, Princeton College
Kuendel, Horst Joseph — D.C.
Kukanich, Jennie Magdalene — D.C.
Kukov, Julianna Elizabeth — Va.
Kukuca, Karol — Va.
Kulberg, Leslie Ervin — D.C.
B.E.E. 1951, Pennsylvania State University
Kuller, Lewis Henry — N.Y.
A.B. 1951, Hamilton College
Kulwicz, Walter — D.C.
Kump, Mary Gamble — W.Va.
A.B. 1936, West Virginia University
A.M. 1952, The George Washington University
Kundin, William Daniel — N.Y.
B.S. 1950, University of Maryland
M.S. 1952, Harvard University
Kunetz, George Joseph — Pa.
Kunkle, Frank Albert — Ohio
Kuntz, William Donald — Md.
Kuntzman, Ronald G. — D.C.
B.S. 1954, Brooklyn College
Kupperman, Morton — Va.
B.S. 1948, College of the City of New York
A.M. 1950, The George Washington University
Kurland, Lillian Pavis — Md.
Kurth, Donald Meredith — Md.
A.B. 1954, Dartmouth College
Kurtz, Arlene Malva — D.C.
Kurtz, John Calvin — Nebr.
Kurtz, O'Dean Leonard — Md.
B.S. 1950, Iowa State College
Kurtz, William Lewis — Va.
A.B. 1953, The George Washington University
Kurtzman, David Robert — Va.
Kurz, Mary Elizabeth — D.C.
B.S. 1955, Barry College
Kushner, Herbert Warren — D.C.
Kusher, Juanita Vail — Pa.
B.S. 1924, Cornell University
A.M. 1927, Columbia University
Kutler, Samuel Saul — Md.
A.B. 1954, St. Johns College
Kuykendall, Lucille Mildred — Va.
B.S. in Ed. 1929, New York University
Kuzminsky, Irene Susan — D.C.
Kvedar, John Peter — Md.
A.B. 1950, Catholic University of America
Kvetkas, William Thomas, Jr. — Pa.
B.S. 1952, University of Pennsylvania
Kvitek, Martha D. — Ill.
Kyne, Peter John — D.C.
B.S. 1955, The George Washington University
Kyriakis, John Elias — Greece
Kyriazis, Christ William — D.C.
A.B. 1948, A.M. 1949, The George Washington University
Kyriazis, Peter William — Md.
A.B. 1940, A.M. 1951, The George Washington University
Kyser, Robert C., Jr. — Va.

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Labib, Adel Mahmoud — D.C.
Labrie, Roger Joseph — Mass.
B.S. 1952, Brown University
Labukas, Peter Paul — Md.
B.S. 1947, A.M. 1948, The George Washington University
Lacey, Augustus Joseph — Va.
B.S. 1934, New York University
Lacey, Hubert Nathaniel — Va.
Lacher, Nathan — Md.
B.S. 1940, College of the City of New York
LL.B. 1951, New York University
Lackey, Bruce Edward — Va.
E.E. 1924, Rensselaer Polytechnic Institute
Lackey, Marvin Avis — D.C.
A.B. 1947, University of Washington
LaCoste, William Thomas — Va.
LaCovin, Mary Anne — D.C.
A.B. 1952, The George Washington University
Ladensky, Alberta Agnes — Pa.
Ladikin, Samuel Eugene — D.C.
Ladson, Warren Milton — Va.
B.S. 1952, Wilson Teachers College
Ladenheim, Isaac Clifford — D.C.
Ladomer, Irving — N.Y.
A.B. 1938, College of the City of New York
J.D. 1940, The George Washington University
Ladomer, Sophie Hornstein — Md.
A.B. 1954, The George Washington University
Ladson, Fred Martin — D.C.
B.S. 1932, University of Redlands
Lafferty, Frances H. — Md.
Lafferty, Hayward George — D.C.
B.S. 1951, University of Missouri
Laffoon, William — La.
LaFont, Farrell David — Pa.
LaFratte, Andrew — Mass.
Lahage, Edmund Peter — Md.
A.B. 1951, Boston University
Lahey, James Edmund — Md.
Lahey, John Edward — D.C.
B.S. 1951, University of Maryland
Lahman, Esther Janice — Md.
Lahne, Herbert Jay — D.C.
B.B.A. 1936, College of the City of New York
A.M. 1937, Ph.D. 1944, Columbia University
Laine, Richard Oscar — Va.
A.B. 1950, The George Washington University
Laing, Vivian Hyland — Pa.
Laine, Samuel Charles — Greece
Laise, Philip Andrew — Va.
Lakey, Marianne Virginia — D.C.
Laken, Shirley

Lalash, Basil William Va
B.F.E. 1942, Catholic University of America
LaMalva, Pasquale Anthony Mass.
Lamanna, Anthony L. D.C.
A.B. 1951, Washington Missionary College
Lamanna, Dante J. D.C.
Lamar, Harold Thomas Md.
A.B. 1948, The George Washington University
Lamb, Gordon Barry Conn.
Lambert, Elsie Sutherland Md
B.S. 1954, Johns Hopkins University
Lambert, Eugene Ivanak Md
Lamberton, Jack Ruler Md
B.S. in E.E. 1954, Johns Hopkins University
Lambert, Ronald Robert D.C.
Lamberton, Robert Livingston Va
Lambertson, Helen Clabaugh Md
Lambros, Charles Homer N.Y.
Lambros, Mary H. D.C.
Lamar, Ethel Ashley D.C.
Lamond, Lola McCain Ala.
B.S. 1952, University of Alabama
M.S. 1954, The George Washington University
Lamphier, Lester Boggess Fla.
Lancaster, Edward Lee D.C.
Lancaster, Floyd Alvin, Jr. Maine
Lancaster, Oscar Frederick Md
Landau, Dora Anderson D.C.
A.B. 1949, Pembroke College
Landau, Gerard Saul D.C.
Landau, Harold M. D.C.
Landau, Sherman Arthur N.J.
Lander, Gustave Ill.
A.B. 1950, University of Wisconsin
Landes, Charles Anne Va.
Landes, Joseph Wurtz D.C.
Landis, Frances Elizabeth Va.
A.B. 1954, Shorter College
Landon, Robert Melville N.Y.
A.B. 1948, Amherst College
Landon, William Wayne Texas
B.S. 1949, Lamar College
Langley, James Edward N.Y.
Langley, William Joseph La
B.S. in M.E. 1952, Notre Dame
Lanham, Edna Marie D.C.
A.B. 1948, Iowa State Teachers College
Landstrom, Karl S. Va.
A.B. 1950, A.M. 1952, University of Oregon
Lanier, Thomas Mason Oreg
Lane, Anderson Thomas Va
Lane, Earl Frederick Iowa
A.B. 1934, Carleton College
Lane, Eugene Emerson D.C.
Lane, Francis Edward Md.
Lane, Joseph Murray Ohio
B.S. 1950, Case Institute of Technology
Lane, Joseph Christy Md
Lane, Marion Harmon, Jr. Va
B.S. 1954, Emory and Henry College
Lane, Sheila Ellen Va
Lane, Stewart Lyeberg S.C.
Lane, Thomas Josephine D.C.
Laney, Arthur Rufus, Jr. Md
A.B. 1947, A.M. 1949, The George Washington University
Lang, James John Md.
Lancaster, Charles Robert Conn.
Langston, Leonard Cutler, Jr Ariz.
A.B. 1948, University of Arizona
Lange, Arlene Ethel N.Y.
A.B. 1953, St. Lawrence University
Lange, Ronald Gordon Md
Langenbach, Earl Henry Md
B.S. 1944, University of Missouri
Langley, Catherine Callahan D.C.
A.B. 1950, Trinidad College
Langley, Henry Grady Va
A.B. 1950, University of Georgia
LL.B. 1953, National University
Langley, Everett Barber Md.
B.S. in E. 1934, Princeton University
Langmaid, Richard George Va.
B.S. 1951, University of New Hampshire
Langstaff, Monroe Ky
Langston, Paul Trueman Md
B.S. 1948, University of Maryland
Lankford, John Everett D.C.
Lansdale, Godfrey J. Va.
A.B. 1939, LL.B. 1942, Harvard University
Lansdale, Mary Louise Va
Lansdale, Claudia Chester D.C.
Lansdale, Theodore Marcus D.C.
Lanthier, Gaspard Md
Lao, Vicente Lee Philippines
B.M.E. 1953, University of Wisconsin
Lapham, Lois Eugenia D.C.
LaPlaca, Frederick Gerald Md
Lapinsky, Max Leonard Md
La Pierre, Patricia Joseph D.C.
Larrabee, Gertrude Cecelia Conn.
Larrabee, Antonio Lee Md
A.B. 1951, Washington College
Larrick, Benjamin Franklin Md.
B.S. 1951, The George Washington University
Larsen, Hans Peder Md
B.S. in Engr. 1948, Engineering College at Horsens, Denmark
Larsen, Jack D.C.
A.B. 1942, Princeton University
A.M. 1947, University of Michigan
LL.B. 1952, The George Washington University
Larsen, Marianne Bern Md.
Larsen, Marcia Mann Iowa
Larsen, Spence Lee D.C.
Larsen, Annabel Frances Ill.
Larsen, Augustus D.C.
Larsen, Charles Howard Ind
A.B. 1932, Indiana University
Larsen, John Mitchell Va
Larsen, Lucy Cook Md
Larsen, Lawrence J. Va
A.B. 1935, Wheaton College
Larsen, Paul Frank Md
Larsen, Raymond Morris Md.
B.S. 1941, Bradley University
Larsen, Mary Eve D.C.
LaRue, Mary Virginia Md
Lasher, Donald Roy N.J.
B.S. 1950, U.S. Military Academy
Lask, Joseph Stanley Minn
Lasso, Herman Alfredo D.C.
Lassalle, Peguita D.C.
Lassiter, Earl Christmas, Jr. Va
B.S. 1954, College of William and Mary
Lassiter, James William D.C.
Lataner, Lark D.C.

Lathrop, Robert Park — Md.
B.M.E. 1942, The George Washington University

Latimer, George Webster, Jr. — Md.
B.S. 1955, The George Washington University

Latimer, Monroe Price — Ala.

Latimer, Rowena Carroll — Md.

Latimer, Russell Gordon — Md.

Latimer, Carol Lee — N.Y.

LaTorre, Rose Marie — Pa.
B.S. 1936, Pennsylvania State Teachers College, California

LaTorre, Vincent Thomas — N.Y.

Latta, Marjorie Wood — N.C.
A.B. 1931, Queens College

Latterell, Lawrence Edson — Md.
B.E.E. 1932, The George Washington University

Lauck, Robert Oswald — Va.
A.B. 1932, Wichita University
LL.B. 1934, University of Kansas

Lauder, Robert Bruce, Jr. — N.Y.

Lauderdale, Julius Hanson — D.C.
A.B. 1951, Cornell College

Laudenslager, Frank John — N.Y.
A.B. 1934, Columbia University

Lauder, Edna Jane — D.C.
A.B. 1934, The George Washington University

Laudenberg, Mary Florence — D.C.

Laudermilk, Ralph William — D.C.
A.B. 1921, Westminster University
LL.B. 1924, University of Colorado

Laudner, Richard Monroe — Va.

Laughbaum, John — N.Y.

Laughlin, Jennifer — D.C.
A.B. 1955, The George Washington University

Laurel, Marjorie Ann — D.C.

Laun, Vernon Claire — Md.

Laundie, Dorothea Schulz — Va.
B.S. in E.E. 1945, Ohio State University

Lauder, William Gresham, Jr. — Ohio
B.S. 1940, U.S. Naval Academy

Laudner, Francis Marie — Va.
B.S. 1940, The George Washington University

Laudner, Thomas Jerome — Md.

Laurence, Alice Richard — Conn.
B.S. 1924, Boston University

Laurence, Evelyn — Md.
A.B. 1930, Smith College

Laurence, Jeanne Edna — Ohio

Laurence, Louise Alexander — Va.

Laurence, Myron Charles — N.Y.
B.E.E. 1941, Pratt Institute

Laurens, Donald Burke — Va.

Laurens, Robert — Va.
A.B. 1948, Harvard College
M.S. 1950, University of Chicago

Laurent, Monroe Marie — D.C.

Laurie, Richard Stanley — Va.

Law, Lloyd Hunsicker — Va.

Law, Thomas Dunstan — Va.

Lawhon, John Gallogly, Jr. — D.C.

Lawless, Howard Isaac — Md.

Lawless, Michael Jude — Va.

Lawrence, Philip — D.C.

Lawrence, Gertrude — D.C.

Lawrence, Jeanne Helen — Mass.

Lawrence, Lucille Lillian — D.C.

Le Ba, Thi — D.C.

Lea, Frances Gene — Texas

Leach, Charles Albert — Mass.
B.S. 1952, Springfield College

Leach, Henry Jennings, Jr. — Va.

Leach, Paul Wilcox — Md.
A.B. 1931, Bowdoin College

Leach, Hazel Jones

Leach, Marjorie Everett — Pa.
A.B. 1920, Mercersburg College

Leach, Mary Everett — Pa.

Leach, James Richard — Pa.

Leach, Osborne Taylor — D.C.

Leonard, Lucas McKay — Md.

Leary, Dallas Edward — Va.

Leary, Lida Cooper

B.S. 1928, Appalachian College — Va.

Leary, Mary Kathleen — Va.

Leach, William Howard — Va.

Leachman, Ivan Odell — Va.

Leachman, James Hardee — Va.

Leblanc, Jean — La.

Leblanc, Joseph Lenol — La.

Lebo, Robert Wilson — D.C.

Lebowitz, Paul Henry — Va.

Lebow, Nancy Ann

Lebow, Rachael Mary

B.S. 1935, U.S. Naval Academy — Wis.

Lechner, Lawrence Wood

B.S. 1935, Muhlenberg University — Md.

Lecompte, Joseph Raymond

B.S. in M.E. 1948, University of Maine — Kans.

Lecrone, Mary Jeanette

A.B. 1951, The George Washington University — N.H.

Lecrone, Horace Albert — Va.

Ledbetter, Peggy Sheridan — La.

Lee, Viola Pauline — D.C.

Lee, Anthony Francis — D.C.

Lee, Bessie Kennedy

B.S. 1939, Miami Teachers College — Ohio

Lee, Betty I. — Korea

Lee, Chang Ha

A.B. 1938, A.M. 1955, Chosun Christian University, Korea — Korea

Lee, Chang Ki — D.C.

Lee, Chang Pae — Korea

Lee, Chang Hun

A.B. 1952, Tyn Kuck College — Hawaii

Lee, David Hon Chun

A.B. 1951, University of Hawaii — Va.

Lee, [illegible] — D.C.

Lee, Fitzhugh, Stevens

Lee, Francis Stevens

B.S. 1935, U.S. Military Academy — Tenn.

Lee, [illegible]

Lee, Frank Franklin — Utah

A.B. 1950, Brigham Young University — Va.

Lee, Li Hung

Lee, Lillian Diamond

A.B. 1948, A.M. 1952, The George Washington University — D.C.

Lee, Marianna Fennell

B.S. 1943, Hampton Institute — D.C.

Lee, Mary Ferrell — W.Va.

A.B. 1950, Howard University — D.C.

Lee, Margaret Van Horn

Lee, Maurice — Korea

M.S. 1950, University of Chicago

Lee, Pil Sub — Va.

A.B. 1953, Seoul Commerce College — Va.

Lee, Richard M. — Ind.

Lee, Robert Frank — Ind.

Lee, Robert S.

Lee, Roger Xavier

Lee, Stephen Bacon
A.B. 1927, Washington and Lee University — Conn
Lee, [illegible]
Lee, William Robert — Va
Lee, Gladys Gertrude — Va
A.B. 1934, The George Washington University — Va
Lee, Sarah Pamela
A.B. 1932, Wells College — Md
Leeper, Bernard Irving
B.S. in C.E. 1929, Louisiana State University — Md
Lees, [illegible] Darnell — D.C.
Leeman, Mary Cassilby — Md
Lees, Robert Henry — D.C.
Lees, Bernard M. Kramer — Va
B.S. 1932, The George Washington University
Lefebure, Susan Gail
Left, [illegible]
A.B. 1932, Hunter College — N.Y.
Leftwich, Mary Sewell
Leftwich, Thomas Cullen — Va
A.B. 1932, The George Washington University — Md
Leffler, Rosalyn Lee
Legare, [illegible] — Nebr.
Legare, Walter Rutledge, Jr. — Va
Legare, Daniel Huger — Va
Legare, Richard Lawrence — Va
Legare, William Bernard, Jr. — N.Y.
Legare, George Lamar — D.C.
B.S. 1932, College of the City of New York — Md.
Legare, Saul Florence
Legare, Mildred Mae Lloyd — Va.
B.S. 1934, College of William and Mary — Va.
Legendre, [illegible]
A.B. 1929, Tufts College — Mass.
A.M. 1932, The George Washington University
Legendre, Walter
A.B. 1932, College of the City of New York — Md.
Leger, Mercedes Kramer
A.B. 1932, LL.B. 1934, University of Georgia — D.C.
Legg, Calvin Lyon, Jr.
B.S. 1930, Virginia Polytechnic Institute — Va.
Legge, Jack
B.S. 1933, Maryland State Teachers College — D.C.
Legge, [illegible]
Legge, Ione LaVerty
A.B. 1930, University of California — Wash.
Legge, Rose L. — Calif.
Legge, [illegible], University of California
Legge, Raymond Mortimer — D.C.
B.S. 1933, [illegible] — Md.
A.M. 1934, Colorado State College
Legge, [illegible]
Legge, Phyllis E.
A.B. 1932, [illegible] — N.C.
Legge, [illegible], The George Washington University — Mich.
Legge, [illegible]
Legge, Law 1932, University of [illegible] — Hungary
Legge, [illegible]
Legge, [illegible]
Legge, [illegible], Richmond — Wash.
Legge, [illegible] — Md.
Legge, [illegible], Howard — Penn.
Legge, [illegible] — Ohio

Leggett, Morton Leonard — D.C.
Leggett, Ronald Lewis — D.C.
Leggett, Rodney Lloyd — Va.
B.S. 1933, Clemson State College
Legg, Charles Eugene — D.C.
Legg, Thomas Howard — Va.
[illegible], Providence College
Legrand, Helen Dunne — Ill.
A.B. 1932, Rockford College
LL.B. 1934, Howard University
Legrand, Frederick Adams — Md.
B.S. 1930, M.S. 1933, University of Maine
Legrand, Robert Starling — Md.
A.B. 1931, LL.B. 1934, The George Washington University
A.M. 1933, Harvard University
Leonard, Thomas Pyle — D.C.
Leonard, Alice Pyle — Va.
Leonardatos, Demetrio Metamorios — D.C.
Leonard, V. W. — Texas
Leonardson, Charles Richard — Pa.
Leonard, Gertrude Allard, Jr. — Va.
Le Roy, Julia Adams — Va.
B.S. in H.E. 1932, The George Washington University
Lesesne, Louise Pratt — D.C.
Lesesne, Henry Ravenel — N.Y.
B.M.E. 1930, College of the City of New York
Lesher, [illegible] — Md.
Le Sueur, Jean Madeline — Va.
Leschallas, Florence M. — Md.
Lesnikoff, Eleanor Julia — Conn.
Lesley, Harold [illegible] — D.C.
Lesley, George Williams — Oreg.
Lesley, George Patterson — N.Y.
B.S. 1933, College of the City of New York
Lesnick, Benjamin Ira — D.C.
Lesnick, Stephen Victor — D.C.
Lesnick, Milton Lawrence — Mont.
A.B. 1933, Montana State University
Lesperance, Lionel Anne — Pa.
Lesperance, Rose Bernadette — Pa.
Lesperance, William Noel — Wash.
Lesperance, Gloria Florence — Pa.
Lesperance, Marie Hedwig — Va.
B.S. 1934, University of Michigan
Lesser, Robert William — N.J.
Lesser, Dorothy Rosalind — Va.
Lesser, Samuel Isaac — D.C.
A.B. 1933, Washington and Jefferson College
Lessin, Gertrude Bright — D.C.
LeSueur, Victor R. — Md.
A.B. 1933, George Washington University
Lessenger, Edna Mae — Mass.
Lesser, Gilbert Wilson — N.Y.
A.B. 1932, University of Buffalo
A.M. 1934, University of Texas
Lessenden, Mabel Stephen
Lessenden, Noel J. — D.C.
Lessenden, John Clarence, Jr. — Va.
Lessenden, Harry William, Jr. — Pa.
Lessing, Howard C. — Va.
A.B. 1928, LL.B. 1931, Cornell University — N.Y.
Lessig, Andrew Rupert — W.Va.
A.B. 1933, West Liberty State College
Lessig, Kathleen Rose
Lessig, Rose — Pa.
Lessig, Rosemary Rupert — Md.
A.B. 1932, Duke University — N.Y.
Lesser, Herbert — Md.

Levin, Julian Edwin D.C.
Levin, Neal Theodore D.C.
B.S. 1950, University of Virginia
Levin, Sheldon George Calif.
A.B. 1950, University of Southern California
Levine, Alan Lewis D.C.
Levine, Harold N.J.
B.S. in C.E. 1954, Purdue University
Levine, Robert John Va.
Levine, Saul Va.
Levine, Theodore N.Y.
A.B. 1952, Brooklyn College
M.S. in S.W., 1954, New York School of Social Work
Levinson, Daniel Richard D.C.
A.B. 1951, New York University
Levinson, Jo Ann D.C.
Levinson, Priscilla L. Md.
A.B. 1948, Hunter College
Levinstein, Hyman Joseph Md.
B.S. in Met. E. 1953, B.S. in Ch.E. 1953, University of Michigan
Levitan, Laurence D.C.
B.S. 1955, Washington and Lee University
Leviten, Samuel Harold Md.
Leviton, Daniel D.C.
B.S. 1953, The George Washington University
Levock, Carl V. D.C.
B.S. 1940, Waynesburg College
Levy, Alan C. Md.
B.S. 1952, University of Maryland
Levy, Charles William Va.
Levy, George Bennett Md.
Levy, Joel Hassell N.Y.
Levy, Joseph D.C.
Levy, Lois Werbner Md.
A.B. 1948, Radcliffe College
Levy, Lorraine Marlene D.C.
Levy, Marvin D.C.
Levy, Roberta Lea D.C.
Levy, Steven Everett Md.
A.B. 1955, The George Washington University
Levy, Sue Ann D.C.
Lewandoski, Joseph Walter Pa.
Lewellen, Basford Edward Va.
Lewis, Alfred Leslie Va.
Lewis, Barbara Ann N.Y.
A.B. 1952, Wellesley College
Lewis, Barnard Bevan Md.
A.B. 1953, St. Lawrence University
Lewis, Benjamin, Jr. Va.
A.B. 1951, University of Virginia
Lewis, Chester Alfred Va.
B.C.E. 1942, New York University
Lewis, David Andrew Va.
Lewis, David Evan Pa.
B.S. in Ed. 1954, Pennsylvania State Teachers College, E. Stroudsburg
Lewis, David Wesley Md.
B.S. 1952, Maryland State Teachers College, Frostburg
Lewis, Donald Eugene Va.
Lewis, Floyd Hilton D.C.
A.B. 1951, Florida Agricultural and Mechanical College
Lewis, Fulton III D.C.
Lewis, Gene Hope D.C.
Lewis, Gilbert Howard Pa.
B.S. 1948, U.S. Merchant Marine Academy
B.S. 1951, Massachusetts Institute of Technology

Lewis, Harold Gray Md.
B.S. in A.E. 1947, North Carolina State College Va.
Lewis, Horace Emory
B.S. 1955, Mary Washington College D.C.
Lewis, Jerome Lee
A.B. 1952, Washington and Jefferson College Va.
Lewis, John Beverly D.C.
Lewis, Lionel M.
B.S. 1952, Tennessee Agricultural and Industrial State College Ariz.
Lewis, Orange, Jr. Mass.
Lewis, Pearl Estelle
A.B. 1950, Bethany College Va.
Lewis, Percival Addax, Jr.
B.S. 1951, Virginia Polytechnic Institute D.C.
Lewis, Portia P.
A.B. 1952, Howard University
A.M. 1954, New York University Va.
Lewis, Richard David
B.S. in E.E. 1954, University of Nebraska D.C.
Lewis, Rollins Montpelier Va.
Lewiston, James Clement Va.
Leyden, Lynn Marie Mass.
Leyton, Arthur G. Va.
Lewellyn, Wadsley Chadwick
Li, Laurence Elizabeth
A.B. 1954, The George Washington University D.C.
Md.
Liang, George Kuo-Chu
Libby, Elbert Curtis
B.E.E. 1950, The George Washington University D.C.
N.Y.
Libby, Richard Lois
Liberman, Barbara Lee
Liberman, Samuel D.C.
A.B. 1954, Long Island University W.Va.
Libman, Gerald
Licciardello, James John
B.S. in M.E. 1951, West Virginia University
Lichtenberg, Warren Ivan
Lichtman, Abe Norman
Lichtman, Lionel Saul
Lichtman, Morton
B.S. 1954, College of the City of New York Md.
LL.B. 1957, New York University
Lackey, Howard Rex
B.S. 1956, University of Maryland N.Y.
Lidick, David LeRoy Va.
Liebenstein, Hal
Liebenstein, Marilyn Lois D.C.
Liebow, Benjamin Tex.
Liebow, Harriet
Liedtke, Warren Steiner
A.B. 1948, University of Notre Dame
A.M. 1949, Columbia University
Lieb, Irma Lucas
Lieb, William
Lieberman, Constance Bernadette
A.B. 1948, Emmanuel College
Lieberman, Hershey Phillip
Lieberman, Ray Gerald
Lieberman, Richard Willard
Liebscher, Christian William
Liebscher, Helena Kechne
A.B. 1928, Western College for Women
Liebson, Louis Anton, Jr.
Lieser, Betty Jean
Lievin, Rosanne Marie
Light, Barbara Dorothy
Light, James Wynson

Lightheart, Bessie S. — Miss.
Lightsman, Evelyn Rhea — Canada
Ligon, Mary Adeene — D.C.
Lilleland, Ralph Jordan Herman — D.C.
B.S. 1938, Hebrew University
M.S. 1944, Technical University of Finland
M.S. in M.E. 1950, Ph.D. 1952, Purdue University
Lilly, Richard Gladestone — Md.
B.S. 1945, U.S. Naval Academy
M.S. in E.E. 1951, University of Pennsylvania
Lim, Chong Taek — Korea
B.L. 1949, National University, Korea
Lim, Robert Cheong Jr — Calif.
Lima, Caio Pregalom — Brazil
Lima, Joseph — Md.
B.S. 1950, American University
A.M. 1951, The George Washington University
Limaiz, Joseph — D.C.
Lauea 1951, University of Naples
Limber, Louis George — Md.
A.B. 1951, Marshall College
Linn, Geeming — D.C.
Lund, Carl John, Jr — Texas
A.B. B.A. 1930, M.B. 1933, M.D. 1934, University of Minnesota
Lind, Irma Arthur — Mass.
B.S. 1944, Bates College
Lindaw, Betty Dene — S.C.
A.B. 1954, University of South Carolina
Lindberg, George Eugene Zipf — Fla.
B.S. 1948, Florida State University
M.S. 1951, Omaha University
Lindemann, Barbara Alice — N.Y.
A.B. 1954, Sarah Lawrence College
Lindner, Robert Joseph — Va.
Lindsay, Lawrence Albert — Va.
A.B. 1950, Ohio Wesleyan University
Lindsey, Jonathan — D.C.
Lindsey, Charles Vernon — Va.
Lindsey, Thomas Francis — Va.
Lindsey, Alfred Everett — Md.
Lindstrom, Kenneth Vaen — Mich.
B.S. 1942, U.S. Naval Academy
Linebarger, Margaret Stone — Md.
A.B. 1951, The George Washington University
Liner, Douglas Lord — Va.
B.S. 1952, Wilson Teachers College
A.M. 1953, The George Washington University
Ling, Kuo Ree — China
A.B. 1948, University of Chekiang
Linger, Ernest Woodland — Va.
B.S. 1934, The George Washington University
Link, Stephen — D.C.
B.S. 1929, A.M. 1930, New York University
Linn, Mary — D.C.
B.S. 1952, Harvard University
Linn, Dorothy — S.D.
B.S. 1938, George Peabody College for Teachers
Linke, Susan — Va.
Linn, Elinor Ann — D.C.
Linn, Lottie Bernard — D.C.
Linn, Bessie Travers — S.D.
Linnemeyer, Robert Steven — Va.
Lipman, Stanley Melvin — D.C.
Lipp, Edward — D.C.
B.S. 1949, Temple University
A.M. 1950, University of Pennsylvania

Lipton, Benjamin Bertrand — Va.
LL.B. 1943, St. John's University
Lipton, Bertrand David — D.C.
A.B. 1950, LL.B. 1952, New York University
Lipitz, Irwin Hirsh — D.C.
Lisa, Emanuel Herbert — Ohio
B.S. 1940, Ohio State University
Lisa, Publius Thomas — Md.
Lisa, George — D.C.
A.B. 1955, The George Washington University
Liston, Elizabeth Margaret — Va.
A.B. 1943, Mount Mercy College
Litke, Archer Lindsay — Md.
B.S. 1944, Temple College
M.E.A. 1947, University of Pennsylvania
Litsky, Irene — Md.
Litt, Marilyn Murray — D.C.
Littell, Nelson, Jr — D.C.
B.S. 1941, Pennsylvania State University
Little, Eleanor Grier — D.C.
A.B. 1928, Vassar College
Little, Mary — D.C.
Littlejohn, Lelia Frances — D.C.
Littleton, Larry Marion — D.C.
Livers, Ralph J. — Idaho
B.S. 1954, University of Idaho
Livi, Francis Joseph, Jr — D.C.
Livingston, Edward Harwood — Va.
Livingston, Orin Ford, Jr — Ark.
B.S. 1955, University of Arkansas
Livingston, Farley Joe — D.C.
Livshin, Anthony — Md.
Llanerch, Manuel Alvarez — Cuba
Lloyd, Albert Lawrence, Jr — Va.
A.B. 1931, A.M. 1934, The George Washington University
Lloyd, Arthur Eugene — Md.
B.S. 1944, U.S. Merchant Marine Academy
Lloyd, Frances Ann — D.C.
Lloyd, Hermon Bell — Va.
A.B. 1952, Randolph-Macon College
Lloyd, Nancy Genevieve — D.C.
Lloyd, Thomas Henry, Jr — Va.
A.B. 1954, University of North Carolina
Lobenstine, Jack Christopher — D.C.
Lobey, Ray Williams, Jr — D.C.
Lobo, Maria Laura Ferreira — Brazil
Lobo, Osvaldo Castro — Brazil
Lobrecht, Lionel Kaufman — Md.
Locatelli, Joseph Rose — D.C.
Locke, Lawrence George — N.Y.
Locke, William Alan — D.C.
Lockard, Paul A — Md.
Lockley, Theresa Christine — Pa.
Loe, Helen Vivian — D.C.
Loe, Myron L. — D.C.
A.B. 1950, The George Washington University
Loewy, Marie Therese — Iowa
A.B. 1951, University of Iowa
Logsdon, Mary Sherwood — Md.
B.S. 1946, U.S. Merchant Marine Academy
Lohse, Harry — Va.
Lombard, Cecile Marie — Va.
Lombard, Walter Ruffin — Mass.
B.S. 1951, Tufts College
Lomax, Doris Anita — D.C.

Logan, Gerald Francis, Jr. — Md.
B.S. 1950, M.S. 1952, University of Pittsburgh

Logozzo, Ronald Daniel — N.Y.

Lohse, Ruth — Okla.
B.S. 1943, Radcliffe College

Lolacono, Peter St. Leon — Md.

Lokerson, Jean Elizabeth — Md.

Lomison, Vivian — Nebr.

Lone, Anna Jane — D.C.

Long, Dorothy Jean — Md.

Long, Nancy Catherine — Md.
A.B. 1952, The George Washington University

Long, Norma Dean — Md.
B.B.E. 1943, New York State Teachers College

Long, Ruth Eileen — Tenn.

Long, Samuel Eugene — N.Y.
B.S. 1953, Wagner Lutheran College

Long, William Alfred — Ohio
A.B. 1954, Ohio Wesleyan University

Longenecker, Betty Hanna — D.C.

Longino, Francis John — S.D.

Longley, Robert William — Md.
B.S. 1948, Loyola College
M.S. 1952, The George Washington University

Loos, Anna Margaret — D.C.
B.S. 1929, University of Chicago
Ph.D. 1931, Charles University, Prague, Czechoslovakia

Loos, Emil H. — D.C.

Looney, Howard C. — Md.
B.S. in E.E. 1928, University of Michigan

Looney, John Howard — Md.

Looney, Ray Michael — Pa.

Loosbrock, Thomas Albert — Ohio
A.B. 1954, Miami University

Lopata, Barbara Vivian — D.C.

Lopez, Fred — N.M.

Lopez-Sellier, Mario — D.C.

Lorah, D. James — D.C.
A.B. 1954, Catholic University of America

Lord, Rosary Mervin — Pa.

Lord, Charles Melville — D.C.
B.S. 1915, University of Missouri

Lorentzen, Beverly Ann — Minn.

Lorenzo, Michael — Va.
B.S. 1947, Pennsylvania State University

Lory, Marion Joyce — D.C.

Love, Sarah Dewey — Va.
A.B. 1954, Mary-Washington College

Love, Matthew Hartley — Calif.

Lovejoy, Eugene Stackpole, Jr. — Conn.
B.S. 1951, College of the Holy Cross

Lovelace, James Joseph — Conn.

Lovelace, Carl Martin, Sr. — D.C.

Lovell, Kathryn Teresa — Mass.

Lowe, Carl George — D.C.
A.B. 1950, College of Wooster

Lowe, Ronald Lee — W.Va.

Lowman, William Benjamin — Md.

Lowman, James W. — D.C.

Lowndes, Norma Jean — D.C.

Lowry, Lee Gibson — Md.
A.B. 1951, Bridgeport College

Low, Ronald Hoyle Chun — Hawaii
A.B. 1951, Yale University

Low, Rowland James — Md.
A.B. 1955, The George Washington University

Lowe, Francis Gerald — Md.
A.B. 1955, The George Washington University

Lowe, Harvey Spencer, Jr. — Md.

Lowe, Lila — Md.

Lowe, John Carl — Va.

Lowe, Loretta Beatrice — Va.

Lowe, Robert Gayle III — Va.

Lowe, Robert I. — Md.

Lowe, Robert Warren — Va.

Lowenstein, Martha Rutherford — D.C.
A.B. 1948, Wellesley College

Lowenthal, Ethel — D.C.

Lowens, Horace Robinson — W.Va.
B.M.E. 1941, Clarkson College

Lowens, Thomas Cummings — Va.

Lowman, Joseph Allen, Jr. — Ala.
B.S. 1951, University of Alabama

Lowry, Mary Lou — Va.
B.S. 1954, The George Washington University

Loyd, Ray Dean — Md.

Lozano, Francisco Ramon — D.C.

Lubin, Isador Meyers — D.C.
A.B. 1948, The George Washington University

Lubliner, Ronald Alan — Md.

Lubliner, Diana Lee — Md.

Lubrano, Anna N. Ferris — D.C.
B.S. 1936, University of London
B.C.L. in Law 1939, Middle Temple, London
LL.M. 1943, The George Washington University

Lucas, Barbara Lee — Va.

Lucas, Cathleen Charles — D.C.
B.S. 1951, U.S. Naval Academy

Lucas, Donald Howard — Md.
A.B. 1950, The George Washington University

Lucas, Gerald Lamoyne — Va.

Lucas, Herbert, Jr. — D.C.
B.S. 1953, Howard University

Lucas, Marianne — Md.

Lucas, Patricia Constance — D.C.

Lucas, Raymond Albert — Va.

Lucas, Rosemary Hanna Aubrey — Md.
B.S. in C.E. 1947, University of Illinois

Lucchesi, Stephanie M. — Md.
A.B. 1948, Trinity College

Lucchi, John Francis — Va.
B.S. 1953, University of Maryland

Luce, William Bennett — N.Y.
A.B. 1950, University of Richmond

Luckett, George — Ariz.

Luckett, Edward Albert — Ala.

Ludden, Mary Frances Barber — W.Va.

Ludlow, Allen Dyer — D.C.

Ludtke, Harold Lawrence — Md.

Luebbehusen, Hazel McClure — Kans.
A.B. 1927, University of Kansas
A.M. 1945, The George Washington University

Luecke, Dorothy — N.J.
B.S. 1950, New Jersey State Teachers College, Jersey City

Luff, Kenneth Vernon — Va.

Luff, William Herbert — Va.

Luhan, Joyce Barbara — Md.

Lukaszczyk, Helen Bertha Md.
Lunz, Ruth Stewart Ga.
Luscan, Mary Lee Va.
Lusk, Dixon Wilmot Va.
B.S. (agr.) 1951, The George Washington University D.C.
Lust, Constance M. Va.
A.B. 1950, College of Wooster D.C.
M.A. 1952, The George Washington University
Lutes, Barbara Vee
Luther, Barbara Cynthia D.C.
Luther, Constance J. D.C.
B.M.E. 1949, College of the City of New York Md.
Lutsky, Walter J.
Lutterloh, Edward Charles, Jr. Calif.
Lutz, Wilbert Elizabeth Va.
B.S. in L.S., B.Ch.E. 1948, College of the City of New York Va.
Lutz, Robert C. N.Y.
B.S. 1952, University of Idaho
Luzier, Arthur James Vincent D.C.
Lyda, Charles S. Va.
B.S. 1951, Commerce Institute of Technology D.C.
Lyday, Mary Elizabeth
A.M. 1952, Columbia University
Lyle, Robert Wilson
B.S. in M.E. 1950, University of Iowa Fla.
Lyle, Howard Adams
Lyle, Lawrence Lewis Va.
Lyle, Lucian Lewis Md.
Lyman, Barbara Victoria Mass.
Lynch, Joseph Ann Va.
Lynch, Nicholas St. Boyd Mass.
Lynch, Robert Lee Va.
Lynch, Thomas Bell
Lynch, Walter Bell, Jr. W.Va.
B.S. in C.E. 1950, University of South Md.
M.S. in C.E. 1951, Georgia Institute of Technology
Lynch, Walter Wilson
Lynch, Wilson Arthur D.C.
Lynch, William Paul D.C.
Lynn, Lawrence Leonard, Jr. Pa.
A.B. Va.
A.M. 1952, University of Los Angeles Md.
Lynn, Mary Elizabeth
Lynn, Robert Gardner D.C.
A.M. 1952, West Virginia Wesleyan Va.
Lynn, Thomas Arthur
Lyon, Barbara Ann
Lyon, Richard Bland
Lyon, Robert Lee N.Y.
B.S. 1952, U.S. Naval Academy Ohio
Lyon, Thomas Edward
Lyon, William Bernard
Lyons, Charles Thomas
Lyons, Donald Wash.
B.S. 1952, University of Washington
Lyons, Edward Joseph
Lyons, Joseph Francis Pa.
Lyons, William Rusk
Lyons, William Thomas
Lyons, Wilson Va.
Lyons, Robert Lee
Lyons, Robert Lee
B.S. 1952, St. Peter's College N.J.

Lyons, Tony Eugene Okla.
Lytle, Carol Helen Ind.
A.B. 1952, Ball State Teachers College
Lytle, J. Warren Md.

M

Mac Hardy, Peg
MacAllaster, Adelia Ohio
MacArthur, Emma Fanny D.C.
MacArthur, Laura Md.
Macauley, Joseph Hugh D.C.
Macauley, Richard Joseph Iowa
Macbeth, Ross Gallagher Cuba
A.B. 1952, Dartmouth University
Macfarlane, Ross Gallagher Md.
A.B. 1952, Johns Hopkins University
MacGuineas, Frances Irene Va.
MacGuineas, Edward Meeker, Jr. D.C.
B.S. 1952, Webb Institute of Naval Architecture
MacIntosh, Roger Mills Va.
MacIntosh, Carol Pennington N.C.
MacIntosh, John Coyle D.C.
MacIntosh, John Dabney Mass.
MacIntosh, Mary Anne Va.
MacIntosh, Mary Margaret Md.
A.B. 1949, Catholic University of America
MacIntosh, Sandra Stevens Md.
B.S. 1952, University of Maryland
Mack, Alonzo Harvey Va.
B.S. 1951, M.S. 1952, Purdue University
Mack, Donald Hammill Va.
Mack, Evelyn Maxwell Bureau of Engraving D.C.
Mack, Jerome John Ohio
A.B. 1952, Hanover College
Mack, Joan Margaret D.C.
Mack, Stephen Hamilton, Jr. Va.
B.S. 1952, U.S. Naval Academy
Mackall, Daniel Fla.
A.B. 1952, University of Vermont
Mackall, Ruth Shewmake Md.
MacKenzie, Robert Alexander Mass.
A.B. 1952, Boston College
Mack, Jacqueline D.C.
Mack, Marjorie Isabelle D.C.
Mack, Mildred Jane Pa.
Mack, Robert James La.
B.S. 1952, Georgetown University
MacKenzie, Helen Gordon Va.
MacKenzie, Ellen Margaret N.Y.
Mackey, Mary Ellen Va.
Mackey, James Henry D.C.
MacLaurin, Edward Wallace, Jr. Mass.
MacMillan, Elizabeth Anne Va.
A.B. 1948, Goucher College
MacMillan, Richard Alexander Calif.
MacNeil, Joseph Shaun Va.
Macomber, Augustine D.C.
MacQueen, Frederick Spruce, Jr. N.J.
B.S. 1952, Rutgers University
Macon, Adelaide Ky.
Macon, Miriam Rose Va.
B.S. 1951, Iowa State College
Macomber, Julia Ann, Jr. Va.
Madden, Madelon Ann N.C.
Madden, Ann Jean Va.
Madden, Anna Louise Md.
Maddox, Grace B. D.C.
B.S. 1944, American University
Madison, Randall Paul Va.
A.B. 1949, Shenandoah College
Maddox, Silas Myles Va.
B.S. 1951, Virginia Polytechnic Institute

Mader, Donald Wilson — Md.
B.S. 1[illegible], University of Maryland
Mader, Walter Edward — Nebr.
B.S. 1951, Iowa State College
Madhavamombhanee Kovit — D.C.
LL.B. 1[illegible], University of Thammasat
Madsen, Andrew Calvin — Va.
Madsen, Harold Robert — Md.
Maestre, Anthony, Jr. — Va.
Magee, William Gluth, Jr. — Va.
Maggs, Mary Ann Cecilia — D.C.
Magruder, Donald Paton — Md.
Magruder, Theda Henderson — D.C.
Maguire, John Barry — Va.
Maguire, Patricia Elaine — D.C.
A.B. 1956, Barnard College
Magoon, Katherine Ford — Md.
A.B. 1914, Randolph-Macon College
Magyar, Anton Sarg — N.J.
Mahan, Bruce James — N.J.
Mahaffey, Lorraine Wingo — Va.
Mahaffey, Mary — Va.
Mahan, John Victory — Mich.
A.B. 1949, University of Pittsburgh
Mahoney, Michael James, Jr. — D.C.
Mahoney, Robert Cornelius — Mich.
B.S. 1952, Michigan State College
Mahoney, Charles Mark, Jr. — D.C.
A.B. 1954, University of Miami
Mahoney, Albert Abraham — Mass.
B.S. 1952, Worcester Polytechnic Institute
Maher, Agnes Lucia — D.C.
Maher, Francis William — Va.
A.B. 1940, A.M. 1952, Catholic University of America
Maher, Lorraine Frances — Md.
Maile, Harriett Ann — Md.
Main, Frank Maw — Texas
B.S. 1952, M.S. 1956, North Texas State College
Mahoney, Elinor — Utah
Mahoney, George F., Jr. — Md.
Mahoney, Jean Helen — D.C.
A.B. 1949, University of Maryland
Mahoney, Florence Hathaway — D.C.
B.S. 1922, Ph.B. 1925, University of Wisconsin
Maidens, William Arthur, Jr. — Md.
Maier, Charles William — N.Y.
B.S. 1949, U. S. Naval Academy
Maigret, Bernita Louise — D.C.
Main, Dorothy Lester — Va.
B.S. 1951, Radford College
Main, George Henry — Md.
B.S. 1940, U. S. Merchant Marine Academy
Main, Robert Jay, Jr. — Va.
B.S. 1951, Virginia Polytechnic Institute
Mainor, Ethel Rudolph — D.C.
Mainor, Francis Kirkwood — Pa.
A.B. 1932, Amherst College
Mainous, Joseph Francis, Jr. — W.Va.
A.B. 1955, West Virginia University
Maiorana, Nathan Joseph — Va.
Maione, Gian Domenico — Italy
Maitra, Isaac Edwin — D.C.
Makdisi, Samir Assa — Lebanon
A.B. 1953, A.M. 1955, American University of Beirut
Makielski, Jean Louise — Mich.
B.S. 1951, Michigan State University

Makrides, Constantine George — D.C.
B.S. 1944, U. S. Merchant Marine Academy
B.S. 1948, University of Maryland
Malaga, Joseph Frank — Pa.
Malasky, Carl Robert — Va.
Malchorn, Merton Kenneth — Minn.
A.B. 1948, A.M. 1955, University of Colorado
Malherek, Paul Francis — N.J.
A.B. 1951, College of St. Thomas
Malhiot, George Donald — Panama
B.S. 1954, University of Maryland — Pa.
Malik, Abdul — Pa.
Malik, Mohd Bashir Ahmad — D.C.
B.S. 1946, Aligarh University, India
Malkin, Eugene Mayer — D.C.
A.B. 1952, University of Maryland
Malkin, Jack — Va.
A.B. 1953, The George Washington University — W.Va.
Mallard, Lacy Lee — N.J.
Malley, Clifford Fabian, Jr. — D.C.
A.B. 1952, Marietta College — Pa.
Mallin, Samuel Frank — Va.
Mallon, George Peter — Va.
Mallory, Hortense Elizabeth — N.Y.
Mallory, Hunter Ellsworth — Pa.
B.S. 1[illegible], Central State College (Ohio)
Malone, Carlton Dumas — D.C.
A.B. 1951, Princeton University — D.C.
A.M. 1[illegible], Columbia University
Maloney, Edward — D.C.
A.B. 1954, The George Washington University — Va.
Maloney, Francis Xavier
Maloney, James Edward — D.C.
Maloney, Joseph Burton — D.C.
B.S. 1[illegible], Loyola College — Va.
Maloney, Joseph Patrick — Va.
B.B. 1954, University of Notre Dame — Va.
Maloney, Maryanne — Va.
A.B. 1946, American University — Va.
M.Ed. 1[illegible], University of Maryland
Malone, Leo Irwin — D.C.
B.E. 1[illegible], Rensselaer Polytechnic Institute — Va.
Malpica, Luis Alvaro — Va.
Maltby, John Wilson — N.Y.
Maltby, William Thomas — Va.
Malucke, Francoise Marie — Va.
Malucke, Henry Erasmus — W.Va.
B.S. 1954, Washington and Lee University — Pa.
Mamaril, William Alonzo — Pa.
Mamaril, Julia — Del.
Mamaril, Shirley Ann — Del.
Mamaril, William Clarence — Del.
A.B. 1[illegible], University of Delaware — Md.
Manbeck, Ray Ruder — Va.
B.S. 1[illegible], Howard University
Manchester, William Dennis — Va.
Manchester, Rosalie Marie — Va.
Manchuk, Ruth Somerset — Va.
B.S. in Ed., [illegible] State Teachers College, West Chester, Pennsylvania
Mandelbaum, Louis Kreig — Va.
B.Mus. 1954, University of Rochester — D.C.
Mandelkorn, Jessie Cooper — Va.
B.S. 1[illegible], The George Washington University
Manger, Robert Omer
Mangum, Jewell Vann
Mangum, Duke Waldo

Mankowski, Jose D.C.
Manley, Virginia Lee D.C.
B.S. 1948, Wilson Teachers College
Manley, Wanda Lull D.C.
Mann, Clifford Paul N.Y.
Mann, Ernest Arnold Ky.
A.B. 1954, University of Kentucky
Mann, Oscar D.C.
Mann, Pauline Walna Fla.
A.B. 1954, Wesleyan College
Mann, Richard Anthony D.C.
Mann, Stanley Joseph N.Y.
A.B. 1951, Clark University
Manry, Vera Williams Va.
A.B. 1941, Texas Christian University
Mansell, William Aden Texas
A.B. 1939, University of Texas
M.B.A. 1950, University of Kansas
Mansfield, Anthony Francis Ill.
B.S. 1954, Loyola University
Mansfield, Carol Kent N.Y.
Mansfield, Frances Edward N.Y.
Mansfield, James Edward Mass.
Mansfield, John Raymond Iowa
Mansfield, Louis Montgomery Va.
Mansfield, Marguerite Va.
A.M. 1928, Columbia University
Mansfield, Miriam Lucas Fla.
Mansfield, Roberta Eastman Fla.
Mansfield, Thomas Paul D.C.
Mansfield, Wyoma D.C.
Mansfield, Wilkes Angelo D.C.
B.S. 1950, University of Pittsburgh Md.
M.B.A. 1952, University of Pennsylvania
Manson, Mary C.
Manuel, Romulo Alva Philippines
LL.B. 1952, Far Eastern University, Manila
Manwell, Dorothy Miller Va.
Manwell, William Allen Ohio
Manzey, William Everett N.H.
A.B. 1952, University of New Hampshire
Manzar, Nasr Ataeh D.C.
B.S. 1954, University of Maryland
Manzoor, Abdulmoeid Zadeh D.C.
A.B. 1954, University of Teheran
Manzel, Howard N. N.Y.
A.B. 1951, Brooklyn College
Mapp, Leroy Harris Va.
A.B. 1942, A.M. 1945, The George Washington University
Mapstead, Roger William Va.
Maquez, Hermenia Almeida Iowa
A.B. 1952, Drake University
Marabeas, Susan Claire Md.
Marabito, Joseph Anthony Utah
A.B. 1951, Brigham Young University
Marable, Lilian Vincent D.C.
Marable, Marion Edmond D.C.
Marable, Ira Paul D.C.
A.B. 1950, Brooklyn College
Marable, Richard Wilson Va.
B.S. 1948, Ithaca College
Marable, Rosemary Teresa D.C.
Marable, Thomas Madison, Jr. Va.
A.B. 1950, Dartmouth College
Marchese, Anthony Russell N.Y.
Marchese, Stanley Andrew Md.
Marcus, Helen Erlene Pa.
Marcus, Ruth D.C.
Marcus, Clemmer B Md.
Marcus, Lloyd Pa.
Marcus, Joel David N.Y.
A.B. 1954, Columbia University

Marcum, Jessee Marvin D.C.
Marcum, Spencer Raymond Md.
B.S. in E.E. 1948, University of Rhode Island
Marden, Earle Rollins Md.
B.S. in M.E. 1951, University of Maryland
Mares, Christopher Gilbert D.C.
Margo, Dennis Jeannie D.C.
Margolis, Harry D.C.
Margolis, Emanuel David Md.
A.B. 1944, Brooklyn College
Margolis, Solomon Leon D.C.
Margolis, Barry Md.
Margolis, Frank Thomas D.C.
A.B. 1947, American University
A.M. 1948, The George Washington University
Margolies, John Alfred D.C.
Margolies, Peter Stavers Fla.
B.S. 1954, University of Maryland
Margolis, Jack Joseph Md.
B.S. 1950, Pennsylvania State Teachers College, East Stroudsburg
A.M. 1951, Columbia University
Mark, Lee N. K. D.C.
Markham, Dan H. Md.
B.S. 1950, Utah State Agricultural College
Markin, Donald Eugene Md.
Markin, Alan Norman R.I.
Markin, Mervyn Lynn D.C.
Markin, Shirley Louise Va.
Markin, Robert Franklin, Jr. D.C.
B.S.E. 1954, Princeton University
Markin, John Marshall Md.
Markin, Charles Austin Va.
A.B. 1951, The George Washington University
Markinkiewicz, Linda Marjorie D.C.
Markinson, Florence Anne Md.
B.S. 1951, St. Joseph College
Markman, Alfred Charles N.Y.
LL.B. 1954, The George Washington University
Markmann, Phyllis Jane D.C.
A.B. 1954, Rosemont College
Marksmill, John Lewis Va.
B.S. 1941, U. S. Naval Academy
Markson, James Ralph N.J.
A.B. 1952, Gettysburg College
Marr, George Alexander Md.
A.B. 1952, University of Maryland
Marra, Joseph Charles D.C.
Marrero, Florence Joseph Md.
Marrero, Gilbert Ray Va.
Marrone, Mary Ann W.Va.
Marra, Cecil Lamb Va.
Marra, Marie Bonnett Va.
Marsh, Carol Amsterdam D.C.
A.B. 1947, Brooklyn College
A.M. 1948, Columbia University
Marsh, David Monroe Md.
A.B. 1954, Brooklyn College
Marsh, Ernest Vann Md.
Marsh, John Dayton Va.
Marsh, Richard Wade Va.
A.B. 1948, American University
A.M. 1949, The George Washington University
Marshall, Burton Adee Va.
B.S. 1951, University of Maryland
Marshall, Burton Stewart Calif.
Marshall, Charles Howard Ohio
Marshall, Constance Mary D.C.

Marshall, Earla Ball — Md
A.B. 1915, Meredith College
Marshall, Elizabeth Drew — Va.
Marshall, Gerald Ivey — Va.
Marshall, Janet Katherine — Calif.
Marshall, Marjorie Barbara — Ill.
A.B. 1935, Carleton College
Marshall, Mary Lane — D.C.
Marshall, Patricia Eilan — N.Y.
Marshall, Ruth — D.C.
Marshall, William Clarkson — D.C.
A.B. 1951, University of Virginia
Marsteller, Mary Rumrey — Va.
A.B. 1954, A.M. 1955, The George Washington University
Martin, Alfred Estelle — Va.
Martin, Carrie Pannbaker — Va.
B.S. in Ed. 1948, Iowa State College
Martin, Charles Edgar — Nebr.
B.S. 1941, U. S. Coast Guard Academy
Martin, Charlotte Edna — Va.
A.B. 1952, Whittier College
Martin, Clark Ogden — Va.
B.S. 1938, University of Virginia
M.P.A. 1954, The George Washington University
Martin, Cyrus Albert — Va.
B.S.E. 1929, Iowa State College
Martin, David Cooper — Pa.
A.B. 1952, Duke University
Martin, Donald Robert — Va.
Martin, Doris — D.C.
Martin, Dorothy Jo Ann — Pa.
Martin, Edgar Thomas — Va.
B.S. 1941, M.S. 1943, Virginia Polytechnic Institute
Martin, Gerald — Md.
B.S. in E.E. 1949, University of Denver
Martin, Henry Francis Beaumont — D.C.
Martin, James Howard — D.C.
A.B. 1924, Erskine University
A.M. 1936, Columbia University
Martin, James Richard — D.C.
Martin, Jeffrey Neal — Maine
A.B. 1950, University of Maine
Martin, Jesse Darrell, Jr. — Va.
B.C.E. 1952, Georgia Institute of Technology
Martin, John Edgar — Va.
Martin, Julia May — Calif.
Martin, Julian Carpenter III — D.C.
Martin, Lee Daniel — Md.
Martin, Mahaley Alta — Md.
Martin, Marguerite Springer — Md.
Martin, Marilyn James — Va.
Martin, Mary Caroline — Pa.
Martin, Pearl Hamilton — D.C.
A.B. 1932, Howard University
A.M. 1951, Columbia University
Martin, Philip K. — Ill.
Martin, Raymond Lucas — Md.
B.S. in E.E. 1950, University of Maryland
Martin, Robert Glen — N.J.
Martin, Rodney Wilbur — Va.
A.B. 1950, Yankton Union University
Martin, Ruth Lucas — D.C.
Martin, William Rodney — D.C.
B.S. 1952, Morgan College
Martinson, Clyde Burtsfield — Va.
Martinson, Clyde — Va.
Martinson, Harold James — Md.
A.B. 1950, Randolph College
M.S. 1954, New York University

Martz, David J. — Pa.
B.S. 1954, Pennsylvania State University
Marvin, Caroline — D.C.
Marx, Frederic Lincoln — Mass.
Marx, Robert Sumner — D.C.
Marz, Gretchen Gray — Va.
Marzano, Andrew Purcell
B.S. 1948, St. Joseph's College — Ohio
Masemore, Ralph Lewis
A.B. 1950, Ohio State University — D.C.
Masemore, Ramsey George
B.S. in E.E. 1948, University of Arizona — D.C.
Masemore, Robert Frank — Va.
Masemore, Sara Marie
Masemore, Clarence Joseph
B.S. 1934, Massachusetts Institute of Technology — Mass.
Mask, Edwin Custer
B.S. 1948, University of Pennsylvania — D.C.
Maskell, Eva Cleve — N.Y.
Mason, Alice Hayward — D.C.
Mason, Anthony B.
Mason, Forrest
A.B. 1941, University of Kansas City — D.C.
Mason, Jewell Mack — Va.
Mason, Katherine Norris
B.S. in Ed. 1948, Madison College — Va.
Mason, Kenneth Norman — Va.
A.B. 1951, Lynchburg College — Va.
Mason, Margaret Bruce
Mason, Norman Randolph, Jr.
A.B. 1954, The George Washington University — N.Y.
Mason, Paul Russell
A.B. 1941, Dartmouth College — N.Y.
A.M. 1943, Harvard University
Mason, Ray Jerome — D.C.
A.B. 1951, Morning Star College
Mason, William Bernard — Va.
A.B. 1949, Randolph-Macon College — D.C.
Massenburg, Rosalind Eugene
Massey, Jeanne E. — Va.
B.S. 1953, Madison College
Massey, Norman
A.B. 1954, The George Washington University — N.C.
Massenburg, Hilda Casey — Md.
Massenburg, Kenneth — D.C.
B.S. 1950, Cheyney University — D.C.
Massey, Emma Elizabeth
Massey, Jesse Clarence
A.B. 1950, St. Mary's University
A.M. 1952, Catholic University of America — Va.
Massey, Robert Parker — Va.
B.S. 1949, Boston University
Massie, Nelson Lucas — D.C.
A.B. 1947, Morgan College — D.C.
Mast, Joseph Mahler — Md.
Mast, Dorothy Wynn
Masterson, Rosemary — Ind.
A.B. 1946, M.D. 1953, Harvard University
Masterson, Robert Eugene — Mont.
B.S. 1947, LL.B. 1949, Indiana University
Masterson, Eugene Wilbur
A.B. 1950, The George Washington University — Ky.
Mastrogiani, Lucien Edwin — Pa.
B.S. 1952, Bucknell College — D.C.
Mastrogiani, Lucien E.
Mastrogiani, Constantine Leonidas
A.B. 1954, The George Washington University

Mavropoulo, Salvatore
B.S. 1945, College of the City of New York
A.M. 1946, The George Washington University
Mawata, Hiroshi
A.B. 1946, Osaka University, Japan
Maxcy, Russell Foster
Maxey, Lucy, Joseph
B.S. in Ed. 1948, Villanova College
Maxfield, Spencer
A.B. 1941, University of Maryland
Maxfield, Margaret Hughes
A.B. 1944, Fordham College
May, Lucille D.
A.B. 1948, Dartmouth College
Maybury, Alice Turner
B.S. 1941, University of Florida
M.S. 1946, Florida State University
Mayer, Francis Henry
B.S. 1941, Rutgers University
Mayer, Edgar Herbert
B.S. 1941, East Carolina College
Mayer, Clarence Leon
A.B. 1948, Bridgewater College
Mayer, Edward Strong
A.B. 1944, Rutgers University
Mayer, Albert
A.B. 1947, University of Nevada
Mayer, Edward Alexander
A.B. 1947, University of Nevada
Mayer, Virginia Wilson
B.S. 1947, Madison College
Mayer, Mary Ann Jones
Mayer, Nicholas Peter
Mayer, Robert Frank
Mayer, Samuel Hall
Mayer, Samuel Bernard
Mayer, Walter Arthur
Mayer, Wilfred Joseph
Mayer, William Albert Miller
Mayer, William Albert
Mayer, Dorothy Gertrude
Mayer, Edward Arnold
Mayer, Mary Lee
A.B. 1944, The George Washington University
Mayer, Richard Isidor
B.S. 1947, University of Vermont
Mayer, Florence Elizabeth
A.B. 1944, Seton Hill College
Mayer, Madeline Hazard
A.B. 1944, Trinity College
Mayer, Barbara M.
Mayer, Frederick
Mayer, [illegible]
Mayer, Rosemary [illegible]
Mayer, Ruth Ann
A.B. 1947, Fairfield University
Mayer, Edward Joseph
Mayer, Joseph Eugene
Mayer, Lucille Agnes
Mayer, Gertrude
Mayer, Gertrude B.
Mayer, Helen C.
Mayer, Anne C.
Mayer, Mary Lee
Mayer, Mary M.
Mayer, [illegible]
Mayer, Hazel Kerrigan
Mayer, Mary
B.C.S. 1943, Georgetown University
Mayfield, Grace
Mayfield, Edward Clinton, Jr.
Mayfield, Clinton Clay, Jr.

Va.
Japan
Pa.
N.J.
Md.
Md.
N.J.
Va.
Nev.
Nev.
D.C.
Va.
Va.
Va.
Pa.
Va.
Va.
Mass.
Va.
N.J.
Pa.
D.C.
Calif.
D.C.
N.Y.
Nebr.
Conn.
D.C.
D.C.
Md.
Va.
D.C.
Md.
Md.
Va.

Mayo, Allan Edmund
B.S. 1942, U. S. Naval Academy
M.S. 1947, University of California at Los Angeles
Mayo, Edgar Lorenzo
A.B. 1942, A.M. 1943, University of Buffalo
Mayo, Patricia Lee
Mayo, William Gardner
B.S. 1941, M.S. 1942, University of Tennessee
Mayo, Gregory Gordon Fraser
A.B. 1942, The George Washington University
Mayrock, Sol Arnold
LL.B. 1926, LL.M. 1927, University of Florida
Mazzarelli, Ernest Ferris
B.B.A. 1941, University of Miami
Mazzei, Marcella I.
Mazzo, Matilda
Mazzo, William Sandra
Mazzoni, Alice E.
A.B. 1944, Pembroke University
Mazzoni, Hector O. Guido
B.S. 1941, New York University
Mazzu, Russell Wayne
B.M.E. 1941, Kansas State College
Mazzucchi, Alfonso Vincent
B.S. 1946, U. S. Naval Academy
Mbiso, Paschal Asu
Mead, Robert Gibson, Jr.
B.S. Cand. Eng. 1941, North Carolina State College
Meacham, Bernard
Meade, Wilbur Willard James
B.E.E. 1939, The George Washington University
Meadow, Evelyn Bernard
Meadow, Ruth Rubin
Meador, Eva Frazer Johnson
A.B. 1941, Bridgewater, Sheffield Colleges
Meadows, Charles Clayton
Meadows, Martin DeWitt
Meadows, Mary Elliott
B.S. 1941, University of North Carolina
Meadows, Robert Marion
A.B. 1941, University of North Carolina
Meadows, William E.
B.S. 1942, Pennsylvania State Teachers College, East Stroudsburg
Meagher, Mathew Bigler
B.S. 1941, Georgetown State University
Meakin, Frank Ross
Meakin, Elmer Hamilton
Meakin, Rebecca Alcorn
Meaney, Mary Hilton
Meaney, Cornelius Gilbert
Meany, Robert Myers
B.S. 1947, Fordham College
Mears, Florence Elmer
A.B. 1941, Syracuse University
Measures, Marion Jones
A.B. 1941, Pennsylvania College
Medalie, Frank Howard
A.B. 1942, The George Washington University
Medaris, James
A.B. 1941, A.M. 1942, University of California
Medaris, Rosemary
Medaris, Clarence Clay, Jr.

Calif.
D.C.
Va.
Va.
N.C.
Mass.
D.C.
Pa.
D.C.
Md.
Va.
N.C.
N.J.
N.Y.
N.Y.
N.Y.
Mass.
D.C.
Va.
D.C.
Va.

McCabe, John D — N.Y.
A.B. 1947, The George Washington University
McCafferty, Herbert Dunn — Pa.
A.B. 1952, Allegheny College
McCaffrey, Robert John — N.Y.
B.S. 1955, St. Peter's College
McCaffrey, Chester Hayden, Jr — Va.
A.B. 1950, A.M. 1952, The George Washington University
McCallum, Eugene William — Va.
B.E.E. 1951, Manhattan College
McCallum, Shirley Ann — Va.
McCallum, Fred Franklin — Mass.
McCallum, Millard R — Miss.
A.B. 1949, University of Mississippi
McClement, Harry Daily, Jr — Va.
McClendon, Robert Cecil — Okla.
McCann, Esme — Md
A.B. 1951, University of Maryland
McCann, Marilyn Jean — D.C.
McCann, Robert Thomas — Md
B.E.E. 1951, The George Washington University
McCann, Theodore Robert — Mich.
McCann, Thomas Francis — Pa.
B.S. 1950, University of Pittsburgh
McCardell, Joseph Martin — Va.
McCarron, Charles Edward — Va.
McCarthy, Dennis Joseph, Jr. — D.C.
McCarthy, Thomas — Va.
McCartney, Ellen Wade, Jr. — Va.
McCarron, Francis John — Md.
B.S. 1952, Georgetown University
McCarthy, Francis X. Joseph — Md.
McCarthy, Helen Mary — Mass.
A.B. 1942, Regis College
LL.B. 1952, The George Washington University
McCarthy, John Ernest — Md
McCarthy, Sean Francis — D.C.
McCarthy, Vincent Cormac — N.Y.
A.B. 1953, Toronto University
McCarron, Barbara I. Palestone — Nev.
McCarron, Louise Forsyth — Mass.
A.B. & Ed. 1952, The George Washington University
McCarroll, James Herbert II — N.C.
McCarthy, Dolly Thorpe — Va.
McCarthy, Leonard Francis — Pa.
A.B. 1950, University of Pennsylvania
McCarter, Fred Lewis — Md
McClanahan, Donald Wallace — D.C.
McClain, George Williams, Jr. — Md.
McClain, Kathryn Elizabeth — Tenn.
McClanahan, Thomas Bussey — D.C.
McClaren, William Hugh, Jr. — Pa.
McClary, Thomas John — D.C.
McCleaster, William Alfred — Md.
McClelland, James Patterson — Va.
A.B. 1951, Syracuse University
McClennahan, Anne Tansey — Va.
A.B. 1949, Greenwich College
McCloskey, Carita Varner — Miss.
McCloskey, Mary Ellen — D.C.
McClung, Julia Alexander — D.C.
McClymond, James Martin — D.C.
McCluskey, Thomas III — Pa.
B.S. 1948, U.S. Military Academy
M.S. 1948, University of California
McCollum, Forrest Brooks — Ark.
McCollum, Sandra Diane — Md.

McConchie, Harold Winfield, Jr — Va.
A.B. 1956, Roanoke College
McConchie, Lillian Marie — D.C.
McCooley, Audrey Marie — Iowa
McConnell, George Jewell — Miss.
McConnell, George Kevin — Va.
McCord, Thomas Eugene — Md.
McCorkle, Henry Leonard
A.B. 1950, University of Texas
A.M. 1951, The George Washington University — Va.
McCorkle, Mary Ellen
A.B. 1946, The George Washington University — Md.
McCormack, George Robertson — Va.
McCormack, John Joseph, Jr — Va.
McCormick, Alton Moffett — Pa.
B.S. 1950, Madison College
McCormick, Austin T., Jr. — Va.
A.B. 1950, King's College
McCormick, Gerald Austin — D.C.
McCormick, M. Louise — Va.
McCormick, Mary Louise — D.C.
McCormick, Mary Law
McCorkle, Robert Eager
B.S. 1950, The George Washington University — Ohio
McCowan, Dan Walter — Va.
B.S. 1949, Utah State Agricultural College
McCoy, Nancy Ellen — S.C.
McCoy, Richard Marty — Va.
McCoy, Robert Carlton — Va.
McCoy, Warner Irving — D.C.
McCracken, Kelly Thomas, Jr — N.C.
McCrae, Rowena — N.Y.
McCrary, Kenneth Lillie
McCrystal, Hugh Kearns — D.C.
A.B. 1951, Johns Hopkins University — Va.
McCubbin, James Melvin
McCullough, James Matthew
B.S. 1949, M.S. 1951, Pennsylvania State University — Md.
McCullough, Richard Cornwell
A.B. 1915, The George Washington University — Md.
McCune, James Mackenzie
A.B. Ed. 1952, Fairmont State College — Iowa
A.M. 1953, West Virginia University
McCune, Robert Glen — Md.
B.S. 1954, University of Nebraska
McCurry, William Smith, Jr. — Va.
B.S. 1948, University of South Carolina — Md.
McDade, William Francis Jr — Va.
McDaniel, Todd Lowell — Va.
McDaniel, Elgin Rainel — Va.
B.I.E. 1947, Virginia Polytechnic Institute
McDaniel, Jerry Francis — Ind.
McDaniel, Loreen Webb
McDaniel, Marlin K. — D.C.
B.S. 1954, Purdue University — D.C.
McDaniel, Roland Edward — Va.
McDavitt, Constance Vought — Ohio
McDermith, Barbara Jane
McDermott, Edwin Floyd — D.C.
A.B. 1951, Denison University — D.C.
McDermott, Francis James — D.C.
McDermott, Francis Owen — D.C.
McDermott, Noel Anthony
McDonald, Amie Charlene
McDonald, Amie Varner — Miss.
A.B. 1933, Morris Harvey College
McDonald, Clyde Dale
B.S. 1952, Tulane University

McDonald Ethel Raynor
A.B. 1929, University of Hawaii — Va.
McDonald Howard Victor — D.C.
McDonald James Robert — D.C.
McDonald John Warwick
B.S. 1925, University of Kentucky — Va.
M.S. 1932, The George Washington University
McDonald Lucien Berry
B.S. 1929, U.S. Naval Academy — D.C.
McDonald Marcelle Florence
A.B. 1929, University of North Carolina — Va.
McDonald Otis Paul — D.C.
McDonald Robert Everett — Md.
B.S. 1932, Iowa State College — Va.
McDonald Russell Fisher, Jr.
A.B. 1933, University of Maryland — Md.
McDonald Thomas Paul — Va.
B.S. 1928, Connecticut University
McDonough Joseph Lester — Va.
McDonough Mary Elizabeth — D.C.
McEwen Annie Carter — Texas
McEwen Newton Lawrence — Va.
B.S. 1926, A.M. 1931, University of Alabama
McFarlane Rosalyn Yarnell
B.S. 1931, U.S. Naval Academy — Fla.
McGehee William Lewis — Ala.
A.B. 1929, LL.B. 1932, University of Alabama
McGehee Kenneth Laurie — D.C.
McGeorge Nina Williams — N.Y.
McGerald Anne Bernard — D.C.
A.B. 1931, Hunter University — Va.
McGeorge Stephens College
A.B. 1931, Missouri Wesleyan College — D.C.
McGowan John Dunning, Jr. — N.Y.
McGraw Ruth Dunning
B.S. 1931, Queens College — Va.
McGraw Robert Preston
B.S. in C.E. 1931, Virginia Polytechnic Institute
McGregor Grace Ruth — Va.
A.B. 1926, Sherman Textbook College
A.M. 1932, St. Louis University — Va.
McGuire Margaret Timberlake
McGuire Rappahannock Thomas — Va.
B.S. 1934, University of Minnesota — Md.
McGuire Sara Bonita
McGuire Henry University — Md.
B.S. 1931, University of Maryland — Iowa
McGuire Gerald Francis, Jr.
M.E. 1931, Iowa State College — D.C.
McGuire John R.
B.E.E. 1931, Catholic University of America
McHenry Katherine Ann — D.C.
McIlwaine Florence Elizabeth — Va.
McIlwaine Florence Mayers — N.Y.
McIlwaine Richard Morris — D.C.
B.S. 1931, Pennsylvania State College
McIntosh Robert James — Va.
McIntosh Rose Ruth
B.S. 1931, U.S. Naval Academy — Mass.
McIntosh Merle Dudley — Mo.
McIntosh Robert Vernon — N.Y.
McIntosh Thomas Michael — Mass.
— Va.

McGraw Duncan Dugan — Va.
B.M.E. 1928, Georgia Institute of Technology
McGraw Forrest Ross — Md.
McGraw Jessie Deane — Texas
A.B. 1931, Texas Institute of Technology
M.I.A. 1932, Columbia University
McGraw Richard Pearson, Jr. — Md.
McGregor Thomas H. — S.C.
B.S. 1931, University of South Carolina
McGregor Wallace Dallas — D.C.
A.B. 1931, University of Florida
McGuckin James Frederick — Pa.
B.S. 1932, Lehigh University
McGuire Marvin Ammon — D.C.
B.S. 1928, Mount Tennessee College
M.S. 1932, Howard University
McGuinness Walter Arthur — Va.
B.S. 1930, U.S. Naval Academy
LL.B. 1934, Georgetown University
McGuire Patrick Edward — D.C.
McGuire Winifred Brooks — D.C.
McHale Margaret M. — Pa.
McHan Thomas Freeman — D.C.
McHenry William Parke, Jr. — D.C.
McHenry Christopher — D.C.
B.S. 1926, M.S. 1929, Howard University
McIlrath James Casey — D.C.
A.B. 1934, University of Massachusetts
McHugh John Richard — Md.
McInerney Philip Michael — Md.
McIntosh John Allen — Ala.
McIntosh Thomas Lee — D.C.
McIntosh John Rupert — Miss.
McKamey William — Md.
B.S. 1931, East Tennessee State College
McKay Donald — Mass.
A.B. 1925, Harvard University
McKay Emerald Ridings — Mo.
B.S. 1929, Northwest Missouri State College
McKee Edwin G. — Miss.
B.B.A. 1931, LL.B. 1933, Lamar College, Mississippi
McKay Rachel Ross — D.C.
B.S. in Ed. 1932, Pennsylvania State University
McKean William Jones — Va.
McKenney Dorothy Robert — D.C.
B.M.E. 1931, Rensselaer Polytechnic Institute
McKee John Nesmith — Kans.
McKee Manning Lee — Va.
McKee Sumner, Jr. — D.C.
A.B. 1931, Columbian University
McKee Thomas Rotherwell, Jr. — Md.
McKee Walter Fraser — Va.
B.Mus.Ed. 1931, New York State Musical College
McKeen Judith Anne — D.C.
McKeever Eugene Joseph — N.Y.
B.S. 1931, Fordham University
McKeever Robert Hazel — D.C.
McKelvey Andrew Kenner — D.C.
A.B. 1931, St. Charles Seminary
McKelvin Kenneth W. — D.C.
B.S. 1932, University of Maryland

M. Kennedy, Margaret E. D.C.
M. Kennedy, Rhonda Woodbury Va.
M. Kennedy, Josephine Williams D.C.
B.S. 1952, University of Maryland
M. Kennedy, Leo Edward Md.
M. Kennedy, Lorraine Ivik D.C.
M. Kennedy, Marilyn Williams D.C.
M. Kent, Kathleen Ann Va.
M. Kent, Allen Robert Va.
M. Kenley, Priscilla I. Md.
M. Kenney, Elmer Franklin Va.
A.B. 1934, University of Virginia
M. Kennon, John Augustus Va.
M. Kenow, Donald Harrison, Jr. Md.
A.B. 1935, Yale University
M. Kenoly, Glen Dean, Jr. Va.
M. Kerin, John David Va.
B.S. in M.E. 1950, University of Notre Dame
M. Kerr, Vern O., Jr. Va.
M. Kerr, Barbara Helen D.C.
M. Kerr, Jeanne Howard Va.
M. Kerschner, Chalton White, Jr. Kans.
B.S. in C.E. 1952, University of Kansas
M. Kerschner, James Joseph D.C.
M. Kerschner, John Thomas Conn.
M. Kerschner, Judith Morgan N.Y.
A.B. 1945, Wellesley College
M. Kerschner, Mary MacMillan Md.
M. Kerwin, Thomas Sheppard Va.
B.S. 1945, Mississippi College
B.F.E. 1954, The George Washington University
M. Kesar, Anna Marie N.H.
Ed.B. 1941, Plymouth Teachers College
M. Kesar, Natalia D.C.
M. Kesar, Max C. Md.
M. Kesar, Max C. Md.
B.S. 1952, U. S. Merchant Marine Academy
M. Kesmodel, Margaret Tomlin N.C.
A.B. 1947, Flora Macdonald College
M. Kessler, Charles Semple Va.
M. Kessler, Penman Alexander D.C.
A.B. 1951, Duke University
M. Kest, Gerald Alan Mass.
M. Kestl, Mary Frances D.C.
M. Kestner, Elizabeth Dean Va.
B.S. 1942, The George Washington University
M. Ketchum, John Robert, Jr. D.C.
M. Ketchum, Conrad Eugene D.C.
A.B. 1948, Randolph College
A.M. 1951, New York University
M. Ketcham, Henry Eisenhart D.C.
B.S. 1940, M.E. 1952, University of Maryland
M. Ketcham, Helen Mae D.C.
M. Ketcham, James Carter Ind.
B.S. 1951, Purdue University
M. Ketcham, Mark Lawrence Md.
M. Ketcham, Monroe Ingram Va.
B.S. 1940, U. S. Merchant Marine Academy
M. Ketcham, Mary Ellen D.C.
M. Ketcham, Theodore Anthony Md.
A.B. 1951, The George Washington University
M. Ketcham, William Howard D.C.
M. Ketcham, Gaynor Henry Md.
B.S. 1944, U. S. Merchant Academy
M. Ketcham, John Patrick D.C.
M. Ketcham, Louise Kessler Maine
M. Ketcham, Reginald Paul Ind.
A.B. 1952, Bowdoin College
McMillan, Robert Wallace
A.B. 1932, Ball State Teachers College
LL.B. 1937, LL.M. 1938, S.J.D 1941, Georgetown University Ohio
M. Millan, Todd James Va.
A.B. 1951, Ohio State University
M. Millan, Olin Wallace Md.
A.B. 1938, A.M. 1939, University of Arkansas
M. Millan, Homer West Va.
B.S. 1952, West Virginia Institute of Technology Ga.
M. Mullan, Edward Brooke Md.
M. Mullan, Jane Va.
A.B. 1953, University of Georgia
M. Mullen, Alexander Ross
M. Murrer, Robert Lacey Va.
B.S. 1951, Virginia Polytechnic Institute Iowa
M. Nab, Hugh John
M. Namara, Richard Vaughan W.Va.
A.B. 1951, The George Washington University
M. Nash, James Nelson Va.
A.B. 1951, West Virginia University
M. Neal, John Enright N.C.
A.B. 1952, University of Miami
M. Neely, Gibbon Elliott D.C.
B.S. 1950, University of North Carolina Mich.
M. Neice, Sheila Ann
M. Neil, Donald Eugene
A.B. 1950, A.M. 1951, University of Michigan
M. Nel, Mary Clayton
M. Nel, Mary Wade
M. Nelan, James Ralph
M. Nelan, Edgar Wenham
M. Nelan, James Ralph
B.S. 1950, University of Michigan
M. Nelan, Robert Warren
M.S. 1947, Massachusetts Institute of Technology
M. Nelan, Jean Henry
M. Nelan, Peter Leonard
A.B. 1950, The George Washington University
M. Nelan, Phyllis Lambert
M. Nelan, Thomas M.
A.B. 1951, The George Washington University
M. Nelan, Andrew
B.S. 1950, U.S. Merchant Marine Academy
M. Nelan, Lee Maxwell
M. Nelan, William Pinkney
A.B. 1910, Emory and Henry College
M. Neley, Edmund Lincoln
M. Nelson, Robert Albert
M. Nelson, Lois Alexander, Jr.
A.B. 1950, I.L.B. 1953, The George Washington University
Ind.
M. Nelson, Mary Pendleton
M. Nelson, Catherine College
A.B. 1950, Randolph-Macon Woman's College
M. Nelson, Richard Henry
M. Nelson, Howard Weidler
A.B. 1948, Hampden-Sydney College
M. Nelson, William Spencer

Meader, Robert Eugene
A.B. 1952, University of Michigan — Mich
Meader, Norward Archibald
B.S. 1941, Virginia Military Institute — Md.
Meares, Betsy Edward — D.C.
Meares, Edward Douglas — D.C.
A.B. 1953, Duke University
Mebane, Banks Holt
B.S. 1949, University of North Carolina — Md.
M.S. 1953, The George Washington University
Mechem, Lee Douglas Ralph — Md.
B.S. 1951, University of Utah
Medeiros, Frank — Mass
Medeiros, William Antonio — Md.
Medford, Annie M. — D.C.
Medford, William V. — Va.
Medford, Nelder Jr.
B.S. 1954, University of Alaska — Minn.
Medovich, George Theodore — Pa.
Meeg, Keith Edward — Va.
B.S. 1951, Iowa State College
Meeker, Eunice Douglas — Wyo.
Meeres, Eugene Marie — D.C.
Meers, Anna Root — Md.
A.B. 1926, Goucher College
F.M. 1942, University of Maryland
Megee, Robert McKelden
Megee, Elmer Lester — Va.
A.B. 1942, Washington University — Md.
Mehl, Josephine Marie
Mehl, Henry Newton Jr. — Ind.
Mehrtens, James Clifford — D.C.
Meidell, Ethel Lee — Va.
LL.B. 1952, Montana State University — Va.
B.S. 1954, Montana State College
Meier, Betty Jane
A.B. 1954, American University — Md.
Meiers, Agnes
A.B. 1952, Eastern State College, Todos — D.C.
Meiklejohn, Anne Newcomb College, Cambridge
Meiklejohn, Anne Peter
Meier, Garland Richard — Md.
B.Mus. 1952, Baylor University — N.Y.
M.M. 1954, Eastman School of Music
Meier, Helen Brenda
Meier, James Conrad — Nebr.
B.S. in E.E. 1950, Clarkson College of Technology — Va.
Meier, Timothy Edward
B.S. 1952, Georgetown University — Fla.
Meier, Erwin
Meier, Edward Paul — D.C.
A.B. 1951, University of Missouri — Mo.
Meier, Irma Louise
A.B. 1948, LL.B. 1950, University of Idaho — Calif.
Meier, Theodore Richard
B.S. in E.E. 1955, University of Maryland — Md.
Meier, Walter
Meier, Walter Julius Jr.
Meier, Walter Julius
B.C.E. 1950, Georgetown University — Md.
Meier, William Gerhard Jr. — Md.
Meier, William Gerhard — Md.
Meier, William Charles — Spain
Meier, Lucien A.
Meier, Walter Jordan — Va.
Meier, William Hesbert, Jr. — Va.
Meier, James Joseph — Va.
B.S. 1952, University of Colorado — D.C.
Meier, Ida Louise Lee — Va.
Meier, Ida Louise Nourse — Colo.
D.C.

Meiser, Charles Alan — Okla.
A.B. 1954, University of Oklahoma
Meisner, Arnold Charles — D.C.
Meisner, Verna Velasquez — D.C.
B.S. 1951, Drake College
Meissgeier, Stephen Alexander — Pa.
A.B. 1954, Yale University
Meissner, Donald Irvin — D.C.
Meissner, Bruce Stanton — D.C.
Meissner, Lois Stuart — D.C.
Meissner, Maurice Hobson — Md.
B.S. 1951, University of Pennsylvania
Meissner, Celia I. — D.C.
Meissner, Celina A.I. — Brazil
Meissner, Celia Mendonez — D.C.
Meissner, Diane Ritter — D.C.
Meissner, Carl George — Va.
B.S. 1951, General University
Meissner, Caroline Rachel — D.C.
Meissner, Louis — Va.
Meissner, Phyllis Diane — D.C.
Meissner, Charles LeRoy — Va.
B.S. 1950, Missouri School of Mines and Metallurgy
Meissner, Calvin Melvin — Md.
A.B. 1954, Johns Hopkins University
Meissner, Caroline Edward — D.C.
Meissner, Mabel Belle — Fla.
Meissner, Lionel Richard — D.C.
B.S. 1942, Miami Teachers College
Meissner, Eugene Adam — Md.
B.S. 1943, Georgetown University
Meissner, Louise Irene — D.C.
A.B. 1948, University of Maryland
Meissner, Henry Schmidt — D.C.
B.S. 1944, Fordham University
Meissner, Anne Wilfred — Mass.
A.B. 1916, The George Washington University
Meissler, Norman Lionel — Pa.
Meissnest, Marilyn — D.C.
Meissner, James Fellon — Va.
A.B. 1951, The George Washington University
Meissner, Genevieve Kay — D.C.
Meissner, James Lee — D.C.
Meissner, Patricia Ann — D.C.
B.S. 1952, Northwestern University
Meissner, Earl Russell — D.C.
Meissner, Sidney Hampton — Va.
B.S. 1954, U.S. Naval Academy
Meissner, Richard Matthew — Ill.
B.S. in E.E. 1955, Marquette School of Engineering
Meissner, Henry
Meissner, Marcella Frances — D.C.
B.S. 1941, Pennsylvania State Teachers College — D.C.
Meissner, Harold Hugh — Md.
A.B. 1934, The George Washington University
Meissner, Marcia James — D.C.
Meissnerstein, James Gail — Mo.
A.B. 1951, University of Missouri
A.M. 1954, The George Washington University
Meissl, Yvonne Fortune — Va.
Meissl, Winona Lee — Md.
Meissner, [illegible] — Conn.
Meissner, William George — Va.
A.B. 1942, University of Pittsburgh

Metz, John Gratton — Va
A.B. 1951, University of Virginia
Metz, John Jacob — Md
Metz, Suzanne Joy — D.C.
Metzel, Elizabeth Cone — D.C.
Metzel, Mary Ellen — D.C.
Metzger, Eric E. — N.J.
B.S. 1951, Queens College
Meyer, Carolyn Wagner — Md.
A.B. 1953, The George Washington University
Meyer, Charles Frederick — Va.
A.B. 1955, DePauw University
Meyer, Paul Donald — D.C.
B.S. 1955, University of Maryland
Meyer, Vera Darrell — Va.
Meyerowitz, Clara Kay — Md.
Meyerowitz, Louise Rae — Md.
Meyers, Barton Paul — D.C.
Meyers, Lewis Arthur — D.C.
A.M. 1951, The George Washington University
Meyers, Marjorie Castle — Md.
A.B. 1928, Athens College
Meyers, Paul Frank, Jr. — Md.
Micali, Anthony Matthew — N.Y.
B.S. 1954, Wagner Lutheran College
Michael, Ruth Gulse — D.C.
A.B. 1952, Wellesley University
A.M. 1953, University of Nebraska
Michaels, Joseph — D.C.
Michaels, Rowland Morton — Md.
B.S. 1948, Bates College
A.M. 1955, The George Washington University
Michaelson, S. Arthur — D.C.
A.B. 1935, New York University
M.S. 1938, University of Cincinnati
Michael, Laurence Josef — D.C.
Michael, Judy Byron — Minn.
A.B. 1950, University of Minnesota
Michel, Russell Henry — N.J.
B.S. 1951, Rutgers University
Michel, Robert William — Fla.
B.M.E. 1950, New York University
Michelsen, Paul Frederick — Md.
B.E.E. 1951, The George Washington University
Michelson, Aaron — Md.
A.B. 1928, New York University
Michelson, Kenneth Charles — Minn.
Mickey, Thomas Eugene — Pa.
Middlebrooks, Thomas Alwan — Va.
Middleton, Patricia Ann — Md.
A.B. 1955, American University
Middleton, Peter Lewis — D.C.
Middleton, Donald Ray — Va.
Midgett, Richard Wayne — Md.
B.S. 1952, Columbia University
Midkiff, Charles Robert, Jr. — D.C.
Mielke, Alice Donald — Md.
Mignone, Phyllis — N.Y.
Mihalas, Lawrence Frank — N.J.
Mihalopoulos, Bea — Va.
Mihaly, Leonard Alexander — Md.
B.S. 1947, M.S. 1949, University of Michigan
Mika, Paul Jason — D.C.
A.B. 1951, University of Pittsburgh
Mikelonis, Frances — Va.
Mikell, Henry Ravenscroft III — D.C.
Mikesell, Mary Helen — Pa.

Miller, Dominick Joseph — M
Miller, Minnie Mabel — K
Miller, Florence Hazel — J
Miller, Margaret Helene
Miller, Edith Elizabeth
B.S. 1954, Fairmont Teachers College
A.M. 1955, [illegible] University — Va.
Miller, James Russell, Jr. — Va.
Miller, James Russell, Sr.
A.B. 1926, Emory and Henry College — Md.
Miller, Mervyn Edward
B.E.E. Phys. 1953, Cornell University — Va.
Miller, Nellie H.
B.S. 1926, Ohio State University — D.C.
Millestone, Gordon Krupsaw
B.S. 1949, M.S. 1951, Massachusetts Institute of Technology — Md.
Mileto, Dominica Anne — Va.
Miley, Charles Edward
B.S. 1935, Roanoke College — Va.
Miley, Roberta Ladd — Pa.
Milione, Lillian Lucy — D.C.
Milioner, Genevieve David
B.S. 1950, A.M. 1953, The George Washington University — Va.
Millan, Lyle Jordan
B.S. 1954, Loyola College — D.C.
Millar, David Richard — D.C.
Millar, Loel Marston
B.F.A. 1949, University of Arizona — D.C.
Millar, Russell Ward, Jr.
A.B. 1950, University of California — D.C.
Millard, George Owen, Jr. — Wash.
Miller, Alden Hamilton — Va.
Miller, Allen Howard — D.C.
Miller, Alvin — Md.
Miller, Anne Padgett — N.Y.
Miller, Bradford William, Jr.
A.B. 1954, New York State College for Teachers — D.C.
Miller, Buena Marstella — Va.
Miller, Carl Ernest — Va.
Miller, Charles Lynn — Md.
B.S. 1948, University of Omaha
Miller, Christine H
B.S. 1941, Middle Tennessee State College
A.M. 1950, The George Washington University — Va.
Miller, Clair Richard
B.S. 1950, Ohio State University — Va.
M.B.A. 1951, University of Michigan — D.C.
Miller, Claire Wolf — Md.
Miller, Clara Catherine
Miller, Conrad Joseph — Va.
B.S. 1954, Temple University — N.Y.
Miller, Dana Prescott, Jr. — Tenn.
Miller, Doris Metzger — Kans.
Miller, Edward Howle — D.C.
Miller, Eldon Stiles, Jr. — Va.
Miller, Elizabeth Kennedy — Md.
Miller, Elizabeth Willison
Miller, Francis Fabian, Jr. — D.C.
B.S. 1952, University of Maryland — Md.
Miller, George Francis
Miller, Harold Klingman
B.S. 1951, Pennsylvania State University — Ohio
N.Y.
Ga.
Miller, Harold Ray — D.C.
Miller, Harvey Freeman, Jr — Va.
Miller, Her Monroe
Miller, Imelda Chavez
Miller, Irma Virginia

Miller, Jack Wessel
Miller, Jacqueline Lee — D.C.
Miller, James — Va.
B.S. 1943, U. S. Naval Academy
Miller, James Robert — Ga.
Miller, James Thomas
Miller, Jay Howard, Jr. — Va.
Miller, Jeanne Delores — Va.
Miller, Joseph Albert — Md.
B.S. 1951, Scranton University — D.C.
Miller, Keith Hugh — Md.
A.B. 1950, The George Washington University
Miller, Kenneth Lyall — Md.
B.S. in E.E. 1951, Tufts College
Miller, Lawrence MacKenzie — D.C.
A.B. 1954, Randolph-Macon College
Miller, Lucy Virginia — D.C.
A.B. 1941, Shepherd College
Miller, Mary Jones Elizabeth — W. Va.
A.B. 1943, Bryn Mawr College
A.M. 1954, The George Washington University — Md.
Miller, Marilyn Jo
Miller, Marvin Jay
Miller, Mary Louise — Va.
A.B. 1948, University of Texas — Va.
Miller, Melvin Dowell — Va.
Miller, Melvin Merlon
B.S. 1951, LL.B. 1953, University of Wisconsin — Md.
Miller, Mildred Gordon — Wis.
Miller, Morton
A.B. 1952, Barnard College — D.C.
A.M. 1954, Columbia University — D.C.
Miller, Patricia Ann
Miller, Richard Clarence — Va.
A.B. 1952, Bucknell University — Md.
A.M. 1954, Catholic University of America
Miller, Richard Glen
B.S. 1949, West Virginia University — Va.
Miller, Richard Hansell
A.B. 1950, Brown University — D.C.
Miller, Richard Lawrence
Miller, Robert Allen — Calif.
A.B. 1952, Locke University — Fla.
Miller, Robin Burns
A.B. 1951, Fordham College — Ind.
Miller, Roger Ford
B.S. in E.E. 1953, Northwestern University — Ill.
Miller, Roland Gillen
Miller, Roland Wayne
Miller, Rosamond McLendon — Va.
B.S. in Ed. 1948, Mercer Teachers College — Va.
Miller, Ruth Wanda — D.C.
Miller, Ruth Zollinger
Miller, Seymour — D.C.
B.S. [illegible] College of William and Mary — Md.
Miller, Sherwood Marvin — D.C.
Miller, Stanley
Miller, Stephen Elizabeth — N.J.
Miller, Stephen L. Jr. — D.C.
Miller, Thomas Brewer — Va.
Miller, Thomas Rives — D.C.
A.B. 1954, The George Washington University — Md.
Miller, Sydney — D.C.
B.B.A. 1951, College of the City of New York — N.Y.

Miller, Theresa Lida — D.C.
Miller, Thomas Carroll, Jr. — Pa.
Miller, Thomas Edward — Wash.
Miller, Thomas Edwin — D.C.
Miller, Thomas William, Jr. — Va.
Miller, Veronica Agnes — Mich.
B.S. 1947, University of Michigan
Miller, Virginia Lesley — D.C.
B.S. 1954, Western Teachers College
Miller, Virginia Lucee — Va.
A.B. 1948, Stanford University
Miller, Walter Clarence — Pa.
A.B. 1954, Pennsylvania State University
Miller, William Arthur — Va.
Miller, William Charles — Md.
A.B. 1951, University of Maryland
Millington, Richard Anthony — N.Y.
Millman, Jason Bruce — N.C.
A.B. 1951, University of North Carolina
Millman, Harold Irving — D.C.
Mills, Adeline Louise — D.C.
Mills, Bonnie — Miss.
LL.B. 1950, University of Mississippi
Mills, Donald Lee — D.C.
Mills, Dora May — D.C.
A.B. 1945, University of Richmond
Mills, Florence May — Ala.
B.S. 1950, Alabama Agricultural and Mechanical College
Mills, George F. — Md.
A.B. 1954, The George Washington University
Mills, Marilyn Rae — D.C.
Mills, Ruth Annette — D.C.
Mills, Walter James — Ala.
B.S. 1950, Alabama Agricultural and Mechanical College
Milne, J. Sears, Jr. — D.C.
Milnikiel, Zbigniew — D.C.
Milone, Andrew D. — D.C.
Milroy, Lois Frances — Md.
A.B. 1931, Dunbarton College
A.M. 1932, Columbia University
Milstead, Ann Cheryl — D.C.
Milstead, Samuel Ross — D.C.
Minard, Eugene Conrad — D.C.
Mines, James Joshua — Ark.
B.S. 1951, M.S. 1954, University of Arkansas
Minor, Shannon Lemon — Va.
B.S. 1941, Knox College
Minnick, Lucretia Bonaventure — D.C.
Minnigerode, Barbara Jane — Va.
Minnigerode, Alexander J. — D.C.
Minor, Lois Bunting — D.C.
Minor, Roberta Crosby — Maine
A.B. 1954, The George Washington University — Md.
Minorgo, Alice Bennett — D.C.
Minshew, Jean Ferris — Ind.
A.B. 1952, M.A. 1954, Indiana University
Minson, Curtis Albert — Va.
Minter, John Fleming — N.J.
B.S. 1950, Wagner University
Mintzer, Dwight Gilmer, Jr. — Ky.
Minuteman, Harold Robert — Ind.
Mirk, William Fleetwood — Md.
Mirkovich, Milton Carl — Md.
B.E. 1949, M.S. 1952, University of Minnesota
Mirrell, Anita Floyd — Md.

Mitchell, Arthur Ray — D.C.
A.B. 1954, The George Washington University

Mitchell, David Graham — Va.
B.S. 1951, University of Maryland

Mitchell, George Hurst, Jr. — Md.
B.S. 1954, Washington and Lee University

Mitchell, Henry Lee — N.J.

Mitchell, James Anderson — Va.

Mitchell, Julius Campbell — D.C.
B.S. 1942, West Virginia State College

Mitchell, Janet MacDonald — Va.
A.B. 1947, The George Washington University

Mitchell, Jerry Warren — Wash.
B.S. 1951, U. S. Merchant Marine Academy

Mitchell, Jesse James, Jr. — Va.

Mitchell, Marie Rose — Md.
A.B. 1942, Mount Mary College

Mitchell, Morgan Llewellyn — D.C.

Mitchell, Neal Burgess, Jr. — Mass.

Mitchell, Orellana Mildred — Md.

Mitchell, Robert Cass — Md.

Mitchell, Sydney Lucille — Md.

Mitchell, William Hinckley — Va.

Mitzner, Helen Ruth — D.C.
B.S. in Ed. 1948, University of Wisconsin

Moates, Brenda — Texas

Moe, William Raymond, Jr. — Ill.
A.B. 1954, Washington University

Moeller, Elsie Winona — Md.
A.B. 1929, Goucher College
A.M. 1934, The George Washington University

Moeller, Benjamin Franklin — Md.
A.B., M.C.S. 1949, Dartmouth College

Moellmann, Charles Edward — D.C.

Moeth, Charles Robert — Md.

Moeth, Robert Rossiter — Ill.

Moffatt, William Frederick, Jr. — Va.

Moffatt, William Lee — Md.

Moffett, Margareta Olga — Sweden

Moffett, Henry — D.C.

Moe, Marilyn Frances — N.D.

Moffett, Anne T. — N.J.

Mogensen, Constance Leverson — Md.
A.B. 1955, The George Washington University

Moffett, Isabel Rachm — D.C.
A.B. 1953, The George Washington University

Moffett, Leroy William — Va.

Mohagen, Lydia Alice — N.D.
B.S. 1954, The George Washington University

Mohammad, Aswad Fareed — D.C.
A.B. 1947, University of Baroda
A.M. 1949, University of Sind

Mohler, Stephen Charles — Va.

Mohler, Robert Edward — N.J.
B.S. 1954, Lebanon Valley College

Mohr, Esther Louise — Minn.
A.B. 1942, Carleton College
B.L. 1944, University of North Dakota

Mohr, Lawrence Gunter — Va.
B.C.E. 1950, Cornell University

Mohrenweiser, Sidney — D.C.

Mohrhardt, Robert Paul — N.Y.
B.S. 1951, Syracuse University

Mohsney, John Brumley
B.S. 1947, Tufts College
M.S. 1949, The George Washington University

Mohundro, Robert Boyd
B.A. 1948, The Catholic University of America

Moinester, Lloyd Kane, Jr.

Moisseiff, Clifford

Mokrzycki, Janet Howard

Molesworth, Frances Mae

Molesworth, Margaret

Monday, William Wright
B.S. 1956, Illinois Institute of Technology

Monello, John Robert

Monellone, Alice Mendel

Monerman, Leonard Frederick
B.P.E. 1948, Notre Dame College
LL.B. 1951, Harvard University

Money, Lewis Sanford
B.S. in E.E. 1948, Tuskegee Institute
E.E.M. 1949, Michigan State College
Ed.D. 1955, Temple University

Monfalcone, Thomas John

Monfalcone, Thomas Sally

M.S. 1956, Technical College Building

Monfort, Jessie Lindsay

Monfort, Josephine Wimberly

Monfort, Paul Bryan, Jr.

Monfort, Wayne Hugh

Monfrinoli, Michael

A.B. 1951, Dartmouth College

Monfrinoli, Phyllis Ann

A.B. 1954, Carroll College

Monfrinoli, Michel Eugene
LL.B. 1949, A.M. 1951, University of Pittsburgh

Montgomery, Clayton Raymond
B.S. 1950, University of North Carolina

Montgomery, Edward Lee

Montgomery, Sandra Lee

Montgomery, Thomas Howard
B.S. 1950, University of Maryland

Montgomery, William Wayman

Monti, Sandra Anne

Montmorency, Baroness de

B.S. 1944, Pennsylvania State Teachers College, Westchester
A.M. 1949, Columbia University

Montmorency, William Kenneth

Montoya, Josephine Alva

Montoya, Lorenzo Sandoz

Montoya, Solomon Walker

Montoya, Theodore Max

Montz, Ralph Ray

Montz, Richard Anthony
B.S. 1950, University of California
LL.B. 1953, Hastings College

Monty, Clark D. Vest

Monty, Glenn Hamilton

Monty, Gordon Lewis
A.B. 1950, Bowdoin College
LL.B. 1953, Georgetown University

Monty, Gordon Reed
B.S. 1949, Rensselaer Polytechnic Institute

Monty, Donald Hall

Monty, James Edgar
B.S. 1949, Mount Mary Teachers College

Moore, Douglas Hamilton
Moore, Dwight Warren — D.C.
Moore, Earl Kenneth — D.C.
A.B. 1928, The George Washington University
Moore, Ernest Herndon — Tenn.
Moore, Ethelyn Vernon — D.C.
A.B. 1931, A.M. 1934, Louisiana State University — D.C.
Moore, Harold Dewees
B.J. 1931, University of Missouri — Tenn.
Moore, Henderson Simpers
Moore, Henry Middendorf — Ind.
A.B. 1931, Fur Citadel — S.C.
Moore, Holmes Sumner
A.B. 1931, University of California — Va.
Moore, James Ramona, Jr.
B.S. 1931, College of William and Mary — Va. — D.C.
Moore, John Lloyd
Moore, Joseph Cunningham
Moore, Linda Kay — Md.
Moore, Mabel E. — Md.
A.B. 1928, The George Washington University — Va. — Va.
Moore, Marjorie Ann
Moore, Marjorie Wright — Va.
Moore, Mary Jane — Va.
Moore, Nelson Hayes, Jr. — Md.
Moore, Ralph Hugh — Va.
A.B. 1931, Cornell — D.C.
Moore, Robert Leonard College — W.Va.
Moore, Robert Hugh
Moore, Robert Morton — Va.
Moore, Thomas Jones — Md.
Moore, Thomas Crane — D.C.
Moore, Walter Darnell — Md.
B.S. 1931, U.S. Merchant Marine Academy — Va.
Moore, Benjamin Harold
Moore, Mary Lee
LL.B. 1928, Law College, Baghdad — Ohio — Iraq
Moore, Lois Lenore
B.S. 1933, The George Washington University — D.C.
Moore, Florence Martin
Moore, Nelson
A.B. 1931, Seton Hall College — D.C.
Moore, Joseph Columbus — D.C.
Moore, Thomas Edward
Moore, Thomas Hennessy
A.B. 1931, St. Mary's College — Md. — Va.
Moore, Thomas Vincent
B.S. 1931, Pennsylvania State College, Mont Alto — Md.
Moore, Thomas
Moore, Thomas Peter
A.B. 1931, Xavier — Conn.
Moore, Thomas Thompson of the Holy Cross — N.Y.
Moore, Thomas Edward — Md.
Moore, Thomas Moore — Va.
Moore, Thomas Wilson — D.C.
Moore, Thomas Lansdale — Md.
B.S. 1931, A. — N.Y.
Moore, Thomas U.S. Naval Academy — Pa. — Va.
A.B. 1931, The George Washington University — N.M.
Moore, Alfred Theobald
Moore, Lewis N., Jr. — Mo. — Ohio

Moore, Mary Susan — D.C.
B.S. 1930, University of Maryland
A.M. 1934, The George Washington University
Moore, Barbara Woods — Md.
Moore, Christine Morton — Va.
Moore, Christina Ann — Md.
Moore, Donald Thomas — D.C.
Moore, Helen Louise — D.C.
A.B. 1934, A.M. 1936, University of Chicago
Moore, Mueller
A.B. 1931, Muskingum College — Miss.
Moore, Quillen Myers
Moore, Raymond Eugene — D.C.
B.S. 1931, University of Maryland — Md.
Moore, Rowland Lewis
B.S. 1931, West Virginia University — W.Va.
Moore, Rubens Strong
Moore, Walter Alfred — Tenn.
Moore, William Everette — D.C.
Moore, William Jean — Miss.
Moore, Addie Lee — D.C.
Moore, Charles Grier — Va.
Moore, Florence Lenox — Md.
A.B. 1930, American International College — D.C.
Moore, William Kirwan
Moore, Amherst Colored — Va.
B.S. 1931, University of New Hampshire — Md.
Moore, Eugene Henry Pierce
A.B. 1931, Stanford University — Calif.
Moore, Rebecca James
A.B. 1931, University of Louisville — Vt.
Moore, Harris Kenneth
A.B. 1930, The George Washington University — D.C.
Moore, Mary Newton
A.B. 1932, A.M. 1933, University of Nevada — Md.
Moore, Mary Augustine
A.B. 1931, Hood College — Va.
Moore, Robert Mercer
B.S. 1931, Haverford College — Md.
M.D. 1935, The George Washington University
Moore, William Ashley
A.B. 1931, Washington University — Va.
M.F.A. 1933, Yale University
Moore, Ann Dorothea
Moore, Bessie Virgil — Ohio
Moore, Clifton Odell — D.C.
Moore, Edward Dabney — Va.
Moore, Eleanor Jones — Md.
Moore, Dunning Southall — Fla.
Moore, Gene Mills — Ind.
Moore, James Powell — Va.
A.B. 1931, The George Washington University — Md.
Moore, Jesse Richard
Moore, John Clayton — Va.
B.M.E. 1931, North Carolina State College — N.C.
Moore, Margaret Shoemaker
Moore, Mary Frances — D.C.
Moore, Mary Ida — D.C.
Moore, Dorothy Eugene — Ohio
Moore, Robert Lee — Md.
Moore, Virginia — Va. — Md.

Morris, Waldo Victor — Colo.
Morris, Xenophon — Va.
Morrison, Carol Bohner — D.C.
Morrison, Donald George — Md.
Morrison, James Robert — D.C.
B.S. 1951, The George Washington University
Morrison, Lawrence Paul — N.Y.
Morrison, Lawrence Alexander — Va.
Morrison, Robert Eugene — D.C.
B.S. 1950, High Point College
Morrissey, John Edward — Md.
B.C.E. 1951, Villanova College
Morrissey, Lynn Ann — N.Y.
A.B. 1951, Sweet Briar College
Morrissey, Mary Ellen — Va.
Morrissey, Marylou Anne — Va.
Morrissey, William Fitzgerald — N.Y.
A.B. 1952, University of Virginia
Morse, Dorothy Gertrude — D.C.
Morse, Florence Wigington — D.C.
B.S. 1942, Howard University
A.M. 1951, New York University
Morse, James M — Mass.
Morse, Judith Mary — Md.
Morse, Kenneth Samuel — Va.
Morse, Marjorie Lee — D.C.
Morse, Muriel Y — Ill.
Morse, Norman Arthur — Va.
Morse, Wayne Alcott, Jr — Mo.
B.S. in Ed. 1945, Kansas State Teachers College
B.S. in B.A. 1948, University of Kansas
Mortensen, Mary Peter — Va.
Mortensen, Peter Garvin — Wis.
Mosby, Jean Yvonne — D.C.
B.S. 1950, Miner Teachers College
A.M. 1951, New York University
Moscatiello, Attorney Carmen — Pa.
Mosel, Elaine Sagnel — Va.
Mosel, Kaya Barbara — Va.
Mosely, Marion Asa, Jr — Oreg.
Moses, Alfred Lester — Va.
B.S. in B.A. 1950, University of Colorado
M.B.A. 1954, University of Michigan
Moser, Edward Cleveland — Va.
Moser, Eugene Bruce — Md.
Moses, Francis Michael — Md.
Moses, Michael Armond — Md.
B.S. 1950, The Citadel
Moses, Robert L. — Va.
Mosesso, Clarinda Felice — D.C.
Mosesso, Ephraim — D.C.
Mosher, Elmer Schaffner — Va.
Moslem, Mohammad Ali — Iran
A.B. 1951, University of Teheran, Iran
Mosley, Eugene Cole — Miss.
A.B. 1953, Vanderbilt University
Mosman, Kenneth Freeman — Va.
A.B., A.M. 1953, The George Washington University
Moss, Daniel Dwight — Md.
A.B. 1949, University of Redlands
Mossinger, Edward Arthur — Va.
Mossinger, Vesta Thompson — Va.
Most, Anne Marion — D.C.
Most, Howard — Md.
Most, Mary Louise — D.C.
Mosteller, Charles Cranston — Va.
Motyka, Peter Gee — D.C.
Mould, Thomas Mathew — Wis.
B.S. 1951, University of Wisconsin

Mountjoy, Raymond — M...
Mountjoy, Catherine Brown — Mo...
Mousseau, Richard Joseph — Va.
B.S. 1951, University of Minnesota
Moutoux, Katherine Jones — Va.
A.B. 1931, University of Tennessee
Mouw, Robert Bernard — D.C.
Moxley, Robert Harrison — D.C.
Moy, Easter — D.C.
Moy, George K — D.C.
Moy, James — D.C.
Moy, John Gong — Md.
Moyer, Charles Vincent — Md.
Moyerman, Aurelio Joseph — Md.
B.S. 1948, Waynesburg College
Mucha, John — D.C.
Muchnick, Abraham Hershel — D.C.
Mueenuddin, Mubarik — D.C.
Muehlhause, William — S.C.
Mueller, James Lewis — D.C.
B.E.A. 1935, University of Seattle
Mueller, Katrina Joanne — S.C.
Mueller, Richard Paul — D.C.
B.S. 1954, Muskingum College
Mueller, Rita — Va.
Mueller, Sandra M — Ca...
Mueller, Stanley Adolph, Jr. — Pa.
A.B. 1952, University of California
Mulderig, Roseann Maria — D.C.
Mulderig, Viola — Va.
Mulford, Roger Elton — Va.
B.S. 1936, Cornell University
Mulkey, Elizabeth Kimbrough — Md.
A.B. 1955, Randolph-Macon College
Mulkey, Margaret K. — D.C.
B.S. 1922, University of Virginia
Mulkey, William Alexander — Md.
Mullane, Alice Donovan — D.C.
B.S. 1934, New York State Teachers College, Buffalo
Mullarney, John Kenneth — Va.
M.E. 1950, Stevens Institute of Technology
Mullen, Ann Connor — D.C.
A.B. 1952, San Francisco State College for Women
Mullen, Thomas Hubert — D.C.
B.AE Eng 1951, University of Notre Dame
Muller, Irmgard — Md.
Mullican, Nancy — Md.
Mulligan, James Martin — S.C.
Mullinax, Roy Paul — D.C.
B.S. 1953, Furman University
Mulling, Harry Albert — Md.
Mullins, Charles Edward — Va.
A.B. 1954, Princeton University
Mullins, Charles Thomas — Va.
A.B. 1950, Holy Cross College
Mullins, George Gordon — Va.
A.B. 1946, Hamline University
Mullins, Jessie Edith — D.C.
A.B. 1940, The George Washington University
Mullins, Muriel Elizabeth — Va.
Mullins, Raymond Wendell — Ky.
Mullins, Robert Lee — Ga.
Mullins, John Lee — D.C.
Mulvaney, Ann Josephine — Md.
Mulvey, Thomas Wilson
B.S. 1952, Western Michigan College

Munalo, Oreste Louis
Ph. D., 1949, University of Languages, Naples, Italy — D.C.
Munch, Carolyn Margaret
Munsey, Robert Earl — D.C.
Munsvar, Jane M. — Md.
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Munsterche, Charles Marshall — Mass.
A.B. 1927, LL.B. 1929, University of Minnesota — Va.
Munso, Sanford Sterling
Munson, Dorothea Kohler — D.C.
Munson, Harry Randall, Jr. — D.C.
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A.B. 1952, The George Washington University — D.C.
Munson, William Bergman
Munsterer, Sadonah
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A.B. 1954, Bucknell University — Iowa
Munyan, Robert Thomas — D.C.
Munyon, Carolyn Ann
Munyon, Ann Townsend — Va.
Munzenmaier, John Theodore — Nebr.
A.B. 1953, Virginia Military Institute — Hawaii
Munzer, Jesse Owen — Va.
A.B. 1953, The George Washington University — D.C.
Murphey, Randolph Clay III
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B.S. 1951, Minnesota State Teachers College, St. Cloud — Md.
Murphy, Aileen Lemmon
Murphy, Ann Marie
Murphy, Annette Dorothy — Va.
Murphy, Betty Daniel — Mass.
A.B. 1945, Western Maryland College — D.C.
Murphy, Daniel James
Murphy, Daniel Joseph, Jr. — Va.
B.S. 1949, Northeastern University — D.C.
Murphy, George Wardman — Mass.
Murphy, Grace
Murphy, James Emmett — D.C.
Murphy, John Robert — Va.
A.B. 1949, University of Southern California — Calif.
Murphy, John Stewart
Murphy, Lawrence Marseilles — D.C.
A.B. 1951, The George Washington University — D.C.
Murphy, Lloyd Joseph
Murphy, Lloyd Lemar
Murphy, Robert Fremont — N.M.
Murphy, Robert Lawrence — D.C.
Murphy, Rosemary Kathleen — Va.
Murphy, Thomas Frank — D.C.
Murphy, Walter Gary — D.C.
Murphy, Willard Fredrick — Nebr.
Murphy, [illegible] Henry — Md.
Murphy, [illegible] Lloyd — Md.
Murphy, [illegible] Hudson — Mass.
B.S. 1[illegible] Union, Utica — Md.
M.S. in M.E. 1948, [illegible] — W. Va.
M.S. in M.E. 1948, University of Maryland — Md.
Murphy, [illegible] — D.C.
Ph.B. [illegible] Donald
Murphy, [illegible] 1948, University of Wisconsin — Va.
Murphy, [illegible] Richard
B.C.E., [illegible] Rensselaer Polytechnical Institute — Mass.
Murray, [illegible] Maurice Emerson, Jr. — Va.
A.B. 1951, University of Pennsylvania — N.J.
Murray, Raymond Wilkins, Jr. — N.Y.
Murray, Richard Rhodes — Va.
Murray, Robert Joseph — Va.
B.S. 1942, University of Scranton
Murray, Ruby Mennie
Murray, Sue Halloran — Va.
Murray, Thomas Charles — Md.
A.B. 1950, A.M. 1952, University of Notre Dame — N.J.
Murray, W. D.
Murtaugh, Hugh Hunter — D.C.
Murty, Eleanor Anne — Va.
Musselman, Jean Margaret — D.C.
Musser, Frank L. — Va.
Musser, Lucia Alice — D.C.
Musser, Sylvia Katherine — Va.
A.B. 1954, Hollins College — D.C.
Mussett, Lucas Williams
B.S. 1949, St. Joseph's College — Va.
Mussleman, Thomas, Joseph
Musselwhite, Raymond Worth, Jr. — D.C.
Mussina, Carl William — Md.
A.B. 1952, Emory and Henry College — Va.
Mussulli, Alonzo Mackenzie
Muth, Clifford Frederick — D.C.
B.S. 1951, University of Cincinnati — Ohio
M.S. 1953, Ohio State University
Muth, Secretary Henry
A.B. 1[illegible], University of California — Calif.
Myers, Barbara Pennypacker
A.B. 1954, Gettysburg College — D.C.
Myers, Billie Rae
Myers, Carl Samuel, Jr. — Md.
B.A.E. Engr. 1951, Georgia Institute of Technology — S.C.
Myers, David Maurice
Myers, Gerard [illegible] — Md.
A.B. 1[illegible], University of Maryland — D.C.
Myers, Harold
A.B. 1954, The George Washington University — Va.
Myers, Henry L., Jr.
Myers, Judith Hagerstrom — Colo.
Myers, Josephine Staley — Md.
Myers, Lorimer Kenneth — Md.
Myers, Sandra Lee — Va.
Myers, Saul Meredith — N.C.
Myerson, Helen — D.C.
Myhan, Isaac Monroe — D.C.
Myoung, Tong Kwon — D.C.
A.B. 1[illegible], Seoul National University — Korea

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Nabhan, Frederick Nicholas — Pa.
A.B. 1947, Lehigh University
Nace, Yandell
Nachamkin, Nachum — Iran
B.M.E., 1[illegible], New York University — D.C.
Nachtsheim, John Thomas
Nachtsheim, Norman James — Md.
Nadeau, Adolphe Eugene, Jr. — D.C.
Nadig, Clement Eberhart — Pa.
Nagle, Richard Michael — Va.
Nagle, Secretary Cornelius, Jr. — D.C.
B.S. 1[illegible], Bucknell College — Md.
Nagpurkar, Madan
B.S. 1[illegible], University of Scranton — Va.
Nagy, Paul
Nahmens, Andre Joseph — N.Y.
A.B. 1[illegible], A.M. 1[illegible], University of Texas — Mich.
M.P.H. 1953, University of Michigan

Nabors, Theodore N.Y.
A.B. 1950, Siena College
A.M. 1951, New York State College for Teachers
Ph.D. 1961, Fordham University

Nafis, Mohd Aziz D.C.

Nalle, Henry Hanson, Jr. Md.

Nalle, John David D.C.

Nalle, Rosemary Rose Va.
A.B. 1954, University of Virginia

Nanson, Morgan Fla.
B.S. 1950, University of Chicago
LL.B. 1954, University of Miami

Napier, Jack Strickland, Jr. D.C.

Napier, Rose Joseph Va.

Narayan, Rekha D.C.
Higher Teacher 1942, Normal Superior, Colombo

Nardone, Anthony D.C.

Nash, Francis Joseph D.C.

Nasreen, Hameed Ahmed Pakistan
A.B. 1945, University of Punjab
A.M. 1951, University of Delhi
LL.B. 1954, University of Karachi

Nast, Cecile Jane Md.

Nast, Patricia Kay Md.

Nash, Ralph Clarke, Jr. Pa.
A.B. 1951, Princeton University

Nasworthy, Margie Elaine Fla.
A.B. 1954, Florida State University

Natal, Sharon Lowell Ill.

Nation, Mary Jo D.C.

Natividad, Katherine Teresa Pa.

Naughton, Mary Kathleen D.C.

Navarro, Angela Gloria Nev.
A.B. 1951, University of Nevada

Neal, John Henry Va.
B.S. 1951, University of Virginia

Neal, Richard Glenn Va.
A.B. 1952, University of Maryland

Neal, Willette Alfred D.C.
B.S. 1954, The George Washington University

Neale, Beverly Lawrence D.C.

Nebeker, Ronald Ray Utah

Nebeker, Sidney Jay Utah
B.S. 1954, University of Utah

Nebel, Richard Va.

Nedimyer, John Joseph Pa.

Neese, Thomas Marion Md.
B.S. in E.S. 1950, Georgetown University

Needham, Francis Lee Pa.

Needham, William Richard Va.
B.S. 1951, University of Illinois

Needle, Lloyd Harris D.C.

Needle, Rosita Va.

Neel, Edmund Dowell D.C.

Neely, Guy Mason, Jr. D.C.
B.S. 1950, U. S. Naval Academy

Neff, Charlotte W Va.
A.B. 1954, University of Maryland

Negrine, Eric D.C.

Negron, Mario Diego Md.

Neighbors, Patricia Ann D.C.

Neighbors, Wayne Dwight Va.
A.B. 1950, University of Virginia

Neild, Alvin Bayne, Jr. Md.
B.E. 1951, Johns Hopkins University

Neiss, Arthur Raymond N.Y.

Neiss, Emilia Sara Va.
A.B. 1953, The George Washington University

Nelson, Anne Dodenham Va.
B.S. 1938, Mississippi State College for Women

Nelson, Arthur Edward Md.

Nelson, Daniel Lamet Utah
B.S. 1951, Utah State College

Nelson, Daniel Lamet Pa.
B.S. 1951, University of Utah

Nelson, Edward Hilder Utah
B.S. 1950, University of North Carolina

Nelson, Erven Isaac Va.
B.S. 1954, Brigham Young University

Nelson, Harold Willford Md.

Nelson, Jo Ann Texas

Nelson, John Blount N.C.
B.S. 1950, U. S. Naval Academy

Nelson, John Franklin Minn.
B.S. 1950, East Carolina College

Nelson, Kenny Chester Nebr.

Nelson, Oliver M Md.

Nelson, Raymond Arthur Va.
A.B. 1943, Tusculum College

Nelson, Richard Harold Va.

Nelson, Robert Norman Va.
A.B. 1952, B.S. in Med. 1954, University of North Dakota

Nelson, Simon Peter D.C.

Nelson, Stewart Burton Pa.

Nelson, Wallace Martin Texas
B.S. 1951, U. S. Naval Academy

Nelson, Neil D.C.
B.S. in E.E. 1940, University of Texas

Nemec, Herbert J. Wis.

Nemir, Mark Edward D.C.
B.S. 1950, University of Wisconsin

Nemphos, Edmund Anthony D.C.
A.B. 1951, A.M. 1952, La Salle College

Nemzek, Leonard William D.C.

Neubauer, Ronald Lloyd D.C.
A.B. 1954, Temple College
A.M. 1956, Fletcher School of Law and Diplomacy

Neuse, Manuel Eric D.C.

Neuschel, Lawrence Sterling D.C.

Neuschel, Ray D.C.

Neuschel, Monroe Jerome D.C.
B.S. 1951, Commerce of the City of New York
M.S. 1953, Massachusetts Institute of Technology

Neumann, Ann Mary Md.

Neumann, Diane Mary D.C.

Neumann, Lorna Norma D.C.

Neumann, Robert Jay D.C.

Neuville, Marjorie Jeanne W. Va.

Neville, Tony Eugene D.C.

Neumann, Edgar LeRoy Va.

Newell, Hugh Lennon Pa.

Newell, Jerry Stone Va.

Newhouse, Lamont Roger Va.

Newton, Jerry William Md.
B.S. in E.E. 1954, Swarthmore College

Newland, William Ross Md.

Newman, Charles Lewis Md.
A.B. 1951, Pennsylvania State University

Newman, Henry Alexander, Jr. Texas
B.S. 1948, Lamar State Teachers College

Newman, Henry Cecil D.C.
M.E.E. 1954, University of Colorado

Newman, Henry Cecil D.C.
B.S. 1952, University of Illinois

Newman, Jack

Nuttall, Jack Henry
A.B. 1928, Ohio State University Md.
Nuttle, Lawrence Ferne
Nuttycombe, Lucius Berryman Va.
Nuzum, Paul Howard Va.
New, Nora Cravens Md.
A.B. 1929, The George Washington Md.
University
Nwanna, Allen Henry
Nwanna, Francis H D.C.
B.S. 1931, Florida State University Fla.
Nyberg, George Philip
LL.B. 1932, Northwestern College of Law Oreg.
Nye, Hazen Hatch Vt.
A.B. 1926, Brown University
Nyeste, James Endlas Md.
A.B. 1927, Hampden-Sidney College
Nyce, James Robert Va.
B.P.E. 1929, Wisconsin State College Md.
Nyce, Elizabeth Sutherland
B.S. 1927, University of St. Thomas Calif.
Philippines
A.M. 1928, Catholic University of America
Nye, L. Dow III Ill.
B.S. in E.E. 1923, University of Illinois
Nye, Edward Ernest, Jr. Va.
A.B. 1929, Randolph-Macon College
M.S. 1930, Columbia University
Nyman, Elton A. Horst Fla.
A.B. 1931, Wilson College
Nyman, Ernest Albert Va.
B.S. 1929, West Virginia University D.C.
Nyren, Inez
Nyren, Imogene Page Va.
Nyren, Margaret Jane Md.
Nyren, Mary Ann N.J.
Nyren, Oscar Arthur D.C.
Nyren, Jessie Porter Md.
A.B. 1927, Bridgewater College Va.
Nyren, Nannie Wilson
B.S. 1931, Miner Teachers College D.C.
M.A. 1938, New York University
Nyren, Robert Jackson Keating
Nyren, Rose Mae Egan Md.
A.B. 1925, Seton Hall College N.Y.
Nyren, Lois Marr
Nyren, Lois D.C.
Nyren, Constance Mabel N.Y.
Nyren, Arthur LeRoy Md.
Nyren, Hope Mace Fla.
Nyren, Lois Walker D.C.
Nyren, Lois Mae Ill.
Nyren, Lois Lenore D.C.
Nyren, Nancy Carol, Jr. Md.
Nyren, Ruth A. W.
Nyren, Ruth Ann D.C.
Nyren, Thelma Leona Pennsylvania
Nyren, Thomas Roy D.C.
A.B. 1927, Yale University Md.
A.M. 1928, Columbia University N.Y.
Nyren, Yale Law
B.S. 1926, The George Washington D.C.
University
Nyren, Inge
B.S. 1929, Washington Missionary Md.
College
Nyren, Ross Christopher D.C.

Nussbaender, Elton Lee Va.
Nussbaum, Conrad Andrew Md.
B.S. 1937, U. S. Naval Academy
Nyabu, Hisaoko D.C.
Nyburg, Cameron Richard Idaho
B.S. in Phar. 1939, Idaho State College
Nyczkowski, Zenon Md.
Dr. Jur. 1927, University of Cracow, Poland
Nyden, Ben Paul Va.
Nyden, Charles Edward, Jr. D.C.
A.B. 1933, University of California
Nydick, Donald James Okla.
Nyeboer, Gudrun E. Md.
Nyeboer, Rebecca Young N.C.
Nyenberg, Inge Ida S. D.C.
Ph.B. 1933, Heidelberg College
A.M. 1936, Columbia University
Nyhan, George William D.C.
Nyhan, Bernice Marie Kans.
Nyhan, Elton Bible Md.
B.S. 1934, American University
Nyhan, Ellen Pettit Md.
Nyhan, Frank Patrick Conn.
Nyhan, Richard Lawrence Mass.
Nyhart, James Henry Md.
Nyhart, Joseph Charles Md.
Nyhart, Pedro Bayardo Va.
A.B. 1934, The George Washington University
Nyholm, Robert Carter Md.
B.S. in C.E. 1930, University of Maryland
Nyholm, Paul E. R., Jr. Va.
Nyman, Beverly Louise D.C.
B.S. 1931, Massachusetts State Teachers College, Fitchburg
M.S. 1934, Harvard University
Nymeyer, John Williams D.C.
B.S. in C.E. 1935, University of Santa Fauna, Philippines
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B.S. 1937, M.S. 1940, The George Washington University
Nyssen, Florence Esther D.C.
A.B. 1927, The George Washington University
Nyssen, Ann Ruffner N.C.
A.B. 1933, Duke University
Nyssen, Cornelia Gallagher Va.
Nyssen, Jack E. N.C.
Nyssen, Jane Elizabeth Va.
A.B. 1939, Colorado State College
Nyssen, Neal Marshall Md.
B.S. 1928, U. S. Military Academy
Nyssen, Robert William Va.
Nyssen, Barbara Lane Va.
Nyssen, Robert Frost, Jr. Md.
A.B. 1934, Stanford University
Nyssen, Margaret Ransom Md.
A.B. 1935, Goucher College
Nyssen, Donald Hartley Conn.
Nyssen, Bonny Rolland, Jr. Va.
A.B. 1938, University of Alabama
Nyssen, Eleanor Randolph Va.
B.S. in Ed. 1932, Boston University
Nyssen, Hope Stanton D.C.
A.B. 1931, A.M. 1938, The George Washington University
Nyssen, Jane
Nyssen, Thomas Percy Va.
A.B. 1934, University of Montana Md.

Norton, Robert Keel — N.M.
Norton, Virginia Symms — D.C.
A.B. 1927, University of Missouri
Norton, William Allen — Md.
Norvell, John Rodney — Va.
Norwalk, Eugene Edward — N.Y.
Norwood, William Cooke — Fla.
Nottingham, Walter Ivan — D.C.
Nowik, Dan — Md.
Nowik, Fred Michael — Md.
A.B. 1950, Shepherd State College
A.M. 1951, The George Washington University
Novak, Joel Warren — Va.
Novakovs, Laerta — Md.
Nowak, Matthew — D.C.
B.S. 1954, New York University
Nowell, Rufus Homer, Jr. — Texas
Nowell, Nita Fay — Tenn.
Noyes, Anne Sheppard — Md.
A.B. 1951, The George Washington University
Nubbe, Virgil George — Va.
A.B. 1949, The George Washington University
Nugent, Sebastian Pineda — Philippines
B.B.A. 1942, University of the East
Nunnes, Manuel Edward — D.C.
B.S. in B.A. 1947, Bryant College
Nunzio, Nicholas Stephen — D.C.
Nuppel, Frances Helen — Md.
B.S. in B.A. 1948, New York State University
Nuttall, Mary Gertrude — Md.
Nutter, W. Claxton — D.C.
B.S. in B.A. 1951, Salem College
Nuttmann, Harold Franklin — Va.
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Oakes, Jolene Clyde — Ill.
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Oberd, James Albert — Pa.
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Oberndorfer, Mary E. — Va.
B.S. 1945, Birmingham-Southern College
Oberndorfer, James McCaviey — Va.
Oberndorfer, John William — Calif.
A.B. 1948, Earlham College
Oberlin, Phillip Spencer — Ohio
B.Met. Eng. 1955, Purdue University
Obermeyer, Angela — Va.
O'Bevirne, Robert Buel — N.C.
B.S. 1953, University of Maryland
O'Brien, Donald James — Nebr.
M.D. 1928, Creighton University
O'Brien, Edward Paul — Va.
B.S. 1928, Georgetown University
O'Brien, Francis Cassell — Md.
A.B. 1942, University of Maryland
O'Brien, James Dowd — Mass.
B.S. in F.S. 1934, Georgetown University
O'Brien, Jane Mallonee — Pa.
O'Brien, John Cornelius — D.C.
O'Brien, Joseph Turnbull — Calif.
O'Brien, Donald Henry — Va.
Obrien, Cesar — D.C.

O'Connell, Bertha Agnes — D.C.
O'Connell, Catherine — Conn.
O'Connell, Thomas Francis — Va.
O'Connor, Donald Edward — Md.
O'Connor, Donald Martin — Ill.
O'Connor, Kathleen Jane — Ill.
O'Connor, Robert Francis — R.I.
O'Connor, William Thomas, Jr. — D.C.
A.B. 1942, Boston University
Odgers-Jewett, Alexander — Mass.
Odom, Charles Clarence, Jr. — Fla.
A.B. 1954, University of North Carolina
Odom, Jesse Mercer — Miss.
Odonnell, Mary Louise — D.C.
A.B. 1951, The George Washington University
O'Donnell, George William — D.C.
O'Donnell, Richard Peter — D.C.
Odoe, Hadar John — Md.
Oesterreicher, Carl — Va.
O'Fallon, John Dennis — Ky.
B.C.E. 1951, Manhattan College
Ofner, Rosalie Marilyn — Md.
Offenbacher, Hilda Ann — Va.
Offner, Jessica Leslie — Va.
B.S. 1950, University of Idaho
Offenberger, Henry Theodore — Md.
Offutt, Charles Edward, Jr. — Nev.
Ogburn, Ralph Washington, Jr. — Va.
O'Hara, Francis Bartly — Va.
Ogden, Sandra Lee — Md.
Ogilvie, James Benton, Jr. — Pa.
Ogren, Paul Eugene — Pa.
A.B. 1948, University of Tennessee
Ogrodny, Edy Vesta — Ga.
B.S. 1941, James Millikin University
Ogwaree, James M. — Va.
O'Hara, Sydney Lamar — Md.
B.S. 1947, University of Tennessee
Ohanesian, Leonard Michael — D.C.
A.B. 1956, Brown University
M.D. 1940, Harvard University
O'Hara, Charles Edward — Va.
A.B. 1944, A.M. 1956, St. Peters College — D.C.
O'Hara, Audrey Teresa — Ill.
Ohlhausen, Harold Ralph — Ohio
A.B. 1943, LL.B. 1948, Cornell University
O'Hara, Irene Elizabeth — Md.
Ohland, Edward Samuel — D.C.
Ohmann, Karen Ilse — Va.
Ohrstrom, Joseph Massicotte — Va.
B.S. 1948, Tulane University
Okamoto, Kiyome — D.C.
O'Keefe, Mary Frances — Va.
O'Keeffe, Irene Anne — D.C.
Okerlund, Chester D. — Va.
B.C.E. 1947, University of Minnesota
O'Kelly, Helene Theresa — N.Y.
B.S. 1948, De Paul University
Olander, Edward Alfred — Va.
Olcott, Jerome Lane — Va.
A.B. 1942, Randolph-Macon College
A.M. 1947, California State University
Oldfield, William Joseph — Ky.
B.J. 1950, University of Missouri
Oleinick, James Stephen — Calif.
A.B. 1951, Grinnell College
Oles, Hugh Watson, Jr. — N.Y.
A.B. in Govt. 1955, The George Washington University
Olesheske, Mike — Va.

Olewine, Dolores Georgia
B.S. 1954, Boston University D.C.
Olert, George Robert
A.B. 1950, University of Bridgeport Conn.
A.M. 1955, New York University
Oliver, Walter C.
Oliver, Bessie M. D.C.
A.B. 1949, University of North Carolina D.C.
Oliver, Carlene
Oliver, Edward Eugene Ala.
A.B. 1954, The George Washington University Md.
Oliver, Florence Louise
Oliver, Gary Lee Md.
Oliver, Inscoh Andrew Ill.
Oliver, Josephine Elizabeth N.C.
Oliver, Nathan Eugene D.C.
B.S. 1945, U. S. Naval Academy Ark.
M.B.A. 1948, Harvard University
Oliver, Martha
Oliver, Barbara Lou D.C.
B.A. 1953, University of Michigan Va.
Oliver, Ralph Andrew
B.S. in M.E. 1954, University of Michigan Va.
Oliver, Geraldine Betty
Oliver, Harlan Ellsworth D.C.
A.B. 1955, The George Washington University Va.
Oliver, Harland William
B.S. 1951, Kent State University N.Y.
Oliver, Robert Fisher
Oliver, Ruth Lorraine
Oliver, Therese Ann D.C.
A.B. 1954, Rosary College N.M.
Oliver, Charlotte Elizabeth Md.
Oliver, Raymond Andrew
Oliver, Bernard Anthony D.C.
O'Mara, James Herbert Va.
Omlie, Joe Md.
Omlie, Michael Va.
B.S. 1955, University of Maryland D.C.
O'Neal, Elaine Verne Ohio
B.S. 1954, Madison College
O'Neal, George E. Va.
O'Neal, James David
A.B. 1958, The George Washington University D.C.
O'Neal, Jeanne Patricia Md.
B.S. in E.A. 1953, Madison College
O'Neal, Lucille Yvonne Va.
B.S. John Thomas, Jr.
O'Neal, A.B. 1954, Boston College D.C.
O'Neal, Patricia A.R. Md.
O'Neal, Sidney Marie
O'Neal, University of Illinois Md.
O'Neal, William Dunnington, Jr. Ill.
O'Neal, Edward Lincoln
O'Neal, U.S. Naval Academy Va.
O'Neal, Harry Vincent Md.
O'Neal, Lincoln Eugene
O'Neal, Norma Katherine D.C.
O'Neal, Delaware College Md.
O'Neal, Nicholas Pa.
Ong, Rose Hsiou
A.B. 1954, The George Washington Puerto Rico
University Md.
Onley, Lucille O.
B.S. Howard University D.C.
A.M. University of Chicago
Onorato, Salvatore George
A.B. 1949, Concordia University Md.

Ontko, Lydia Marie Md.
B.S. 1951, Michigan State University
Opack, Jerry Howard D.C.
Oppenheimer, Celia D.C.
A.B. 1919, Bryn Mawr College
A.M. 1942, The George Washington University
Oppstrom, Maria D.C.
A.B. 1952, Wellesley College
Ord, Nancy Anne Va.
A.B. 1951, Sweet Briar College
Ordway, Frederick Ira D.C.
B.S. 1950, University of New Hampshire
O'Rourke, William V., Jr. Md.
O'Reilly, Cornelius Audley D.C.
O'Reilly, Hugh Thomas D.C.
B.S. 1954, Georgetown University
Orer, Suzan Montemer Turkey
Ortveld, Beatrice Ellen Md.
B.S. 1951, South Dakota State College
Orgel, Irene D.C.
A.B. 1942, University of California at Los Angeles
A.M. 1946, Columbia University
Oriel, Phyllis Marie Va.
Orlando, Lorenzo Diego N.J.
Orlove, George D.C.
Ormsby, Marion D.C.
A.B. 1924, The George Washington University
Orme, Theodore Schuyler Md
Orrie, Wilhelmina Md.
A.B. 1925, University of Maryland
Orrisby, Edward Lansing N.Y.
Ort, Henry Clayton Pa.
B.S. 1950, Howard University
Orth, Francis G. Va.
A.B. in Ed. 1948, University of Puerto Rico
Osato, Sueshi Hawaii
Osato, Sueko Nishiwa Hawaii
A.B. 1951, The George Washington University
Osborn, James McClain Va.
B.S. 1948, M.S. 1949, University of Maryland
Osborn, Marie Edwin D.C.
Osborn, Robert Harmon N.J.
A.B. 1951, Marywille College
Osborn, Rosa Helen Va.
B.S. 1948, University of Minnesota
A.M. 1948, The George Washington University
Osborne, Gerald Irving Va.
O'Shea, George Augustine Mass.
B.S. 1944, U.S. Naval Academy
M.P.A. 1952, Ohio State University
Osmond, Seymour David D.C.
Osolin, Sesk Hawaii
Ossorio, Ivan Bernard Md.
B.S. 1951, University of Maryland
Ostin, Anna Dubovoy Pa.
Ostin, Edward James Va.
Ostmeyer, Lewis Frederick, Jr. Va.
B.S. in E.E. 1949, The Citadel
Ostmeyer, Dallas D.
Ostrander, Hugh Wilson, Jr. Nebr.
Ostrom, Glen Francis Va.
A.B. 1951, The George Washington University D.C.

Ostrowski, William Lewis — Va
B.S. 1950, College of St. Thomas
A.M. 1952, Catholic University of America

O'Sullivan, John Maurice — D.C.

Otero, Jose Humberto — D.C.

Otero, Lois Reed — D.C.
B.S. 1944, The George Washington University

O'Toole, Teresa Elizabeth — Mich.
B.S. 1944, Loyola University

Ottenberg, Ronald — D.C.

Otterstein, Thomas Ray — Md.
A.B. 1951, Syracuse University
LL.B. 1954, Georgetown University

Ottman, Mildred F. — D.C.

Otto Inzedi Helge, Elvira — Mo.
A.B. 1941, University of Cincinnati
A.M. 1950, The George Washington University

Overman, Lee — Md.

Overmyer, James Edwin — Pa.

Overton, Evelyn Bess — D.C.
B.S. 1933, Miner Teachers College

Overton, Nancy E. — D.C.

Owen, William Harold — Calif.

Owen, Sidney Elias — Va.

Owen, Leslie Eugene — D.C.

Owen, Mary Alice — France

Owens, Alice Patrick — Md.

Owens, I. Marcella — Va.

Owens, James Robert — N.Y.

Owens, Virginia — Pa.

Owings, Chloe Dewey — Va.
A.B. 1924, Emory University

Oxenham, James Paine — D.C.

Oxendine, John Richard — Md.
B.S. 1950, College of William and Mary

Oyama, Jiro — Md.
B.S. 1950, Northwestern University

Oyster, Marcia Hunter — Va.

Oz, Refet C. — Va.

Ozer, Herbert — Md.
A.B. 1939, New York University
A.M. 1941, Temple University

Ozer, Norma Reuse — Md.
A.B. 1952, Hunter College

P

Padin, Gustavo — D.C.

Padin, Maria — D.C.

Pagan, Gustavo Padin Maria — Puerto Rico
A.B. 1952, Interamerican University of Puerto Rico

Page, Ethel Wales — Va.

Page, Lawrence Justus, Jr. — D.C.

Page, Leonard Daniel — N.Y.
B.S. 1951, The George Washington University

Page, Stephen, Jr. — Ga.
B.S. 1943, U. S. Military Academy
LL.B. 1948, University of Georgia

Page, Thomas Stone — Va.

Pagnotti, Elda Claudia — Va.
B.S. in Educ. 1948, U. S. Naval Academy

Packard, Denise Louise — D.C.
A.B. 1950, Minnesota State Teachers College, Moorhead

Packard, Henry Eugene — D.C.
A.B. 1933, The George Washington University

Packard, Mary Lloyd — Fr.

Packard, Ralph John — Md.

Packard, Jessie Mae — Va.

Packett, Ryland DeLaso — Md.

Packett, Evelyn Lorraine — Pa.

Packett, Robert Andrew — Md.

Packett, Lucy Jerome — Pa.

Padilla, George Mario — D.C.
B.S. 1938, M.S. 1951, The George Washington University

Padlar, Gloria Ann — Va.

Padenberg, Lily Dale — Pa.
A.B. 1950, Franklin College of Indiana
A.M. 1951, Heidelberg University

Padenberger, Anne — Md.

Pagan, Katherine — D.C.
B.S. 1948, Western Teachers College
A.M. 1950, The George Washington University

Page, Elaine Randolph — Md.

Page, Lawrence Ness — Pa.

Page, P. Glenn — Va.

Page, Robert White — Va.

Page, Warren — Md.
B.S. in C.E. 1922, Ohio Northern University

Pagliaro, Nancy — Va.
A.B. 1948, Clark University

Paine, Neil B. — Va.
B.S. 1947, Mary Washington College

Painter, Helen Alice — D.C.

Painter, Kenneth John — Md.

Painter, Margaret Hannah — Va.
B.S. in Ed. 1940, Central Missouri State Teachers College

Painter, Robert Kessler — Md.
B.S. 1951, University of Illinois

Palamountain, Edward — Md.
A.B. 1941, University of Maryland

Palen, Alexander — Md.
B.S. 1941, University of Maryland

Palenscar, Peter Henry — D.C.

Palfreyman, Mary Ann — Va.
A.B. 1937, Lebanon Valley College
A.M. 1948, Pennsylvania State University

Palm, Wendell Caldwell — Md.

Palm, William Henry — Va.

Palmatier, Duncan Robert — Pa.

Palmer, Alice Morrissey — D.C.

Palmer, Constance Louise — D.C.
B.S. 1934, Western Teachers College

Palmer, Dorothy Sharp — Va.

Palmer, Gladys Rose — Md.
A.B. 1923, University of Minnesota

Palmer, Harold Lee — Pa.

Palmer, Florence Taylor — Pa.

Palmer, Robert Reed, Jr. — Pa.

Palmer, Lois Lenore — Va.

Palmquist, Ruth Rebecca — Va.
A.B. 1948, Emory College

Palmquist, Evelyn Ruth — Pa.

Palmquist, Eleanor Dorothy — D.C.

Palmer, Herbert Eustace — Pa.

Pan, Alice Lee — China
A.B. 1908, Davidson College

Pan, Mary Gu — Md.
A.B. 1947, National Chengtze University

Panagou, Gus — Va.

Panaby, Lasady

Panek, Louis Anthony Md.
B.S. 1941, Michigan College of Mining and Technology
M.S. 1946, Ph.D. 1949, Columbia University

Panetta, Bernard Joseph
Pannabecker, Nancy Lee Va.
Panos, George John Va.
A.B. 1942, Syracuse University Mass.

Panzarella, Frank Ralph
Panzarella, Joseph N.J.
A.B. 1952, The George Washington University N.J.

Papageorgiou, Nicholas M.
B.S. 1951, American University D.C.
M.S. 1955, The George Washington University

Papageorge, Anna
Papadopoulos, Ioan Nicholas Va.
Papaian, Lenora Jean Del.
Papaian, Louis John Md.
Papas, Fotini Texas
Paparas, Stephen Stavros N.Y.
B.S. 1950, The George Washington University D.C.

Papastavros, Nicholas
A.M. 1941, University of Vilnius Lithuania

Papatsos, Betty Jewel
Papatsos, Konstantine Emmanuel Md.
A.B. 1954, University of Panama Panama

Papayanopoulos, Lenos Rodrigo
Licenciado, 1942, University of Barcelona Spain

Papay, Rudolph Stacy
B.S. 1955, U.S. Naval Academy N.Y.

Papineau, Edna and Horace
B.S. 1950, M.S. 1955, University of Wisconsin Wis.

Pappas, Richard Pisanelo
Pappas, Thomas Peter Philippines
Pappas, George Theodore Va.
B.S. 1951, Prairie View State College D.C.
M.S.W. 1953, Atlanta University School of Social Work (Ga.)

Pappas, Robert Stanley
B.S. 1950, University of North Carolina N.C.

Papps, Charles David
Papps, Henry Breckenridge D.C.
A.B. 1950, Seoul National University Va.

Park, Byung Ran Korea
Park, Helen Lucinda D.C.
B.S. 1948, M.S. 1952, The George Washington University Md.

Park, Kwang Lee
B.E.E. 1954, The George Washington University Md.

Park, Robert Eugene
B.S. 1952, University of Florida Fla.

Park, Sang Lee
B.S. 1954, University of Utah Korea

Parker, Catherine Lewis
B.S. 1951, Oklahoma Agricultural and Mechanical College D.C.

Parker, Catherine Henry Md.
Parker, Clarence Emerson
A.B. 1952, Lynchburg College Va.

Parker, Edith Pendleton
Parker, Hazel Gaines D.C.
Parker, Horace Thomas D.C.
A.B. 1949, Morgan State College D.C.

Parker, Harry LeGette S.C.
Parker, John Kensington Ohio
Parker, Lena Frances Md.
A.B. 1948, Washington College

Parker, Marian Lutz Md.
Parker, Marylin Orlando, Jr. D.C.
Parker, Ralph Williams Va.
Parker, Richard Garland Md.
Parker, Rosser Gaffney N.J.
Parker, Ruth Taylor Va.
Parker, Rosemary G. Md.
A.B. 1952, Webster College

Parker, Virginia A. Fla.
Parker, Wesley James, Jr. D.C.
Parker, Jesse Byron Ala.
Parker, Kendrick Wellman Va.
Parker, Paul Campbell Mo.
Parkmeister, Phyllis Elaine D.C.
B.S. 1945, Kansas State Teachers College

Parmelee, Nelson Shirley Md.
Parr, Gilbert Joseph, Jr. Md.
Parr, Marjorie Louise Pa.
B.S. 1954, College of William and Mary

Parr, Wilma Faye Va.
Parra, Antonio Anthony D.C.
A.B. 1948, A.M. 1952, University of Cincinnati

Parra, Phyllis Hermine Va.
Parrandes, Bernardo Nicaragua
Parrish, Elsie McCullough Va.
B.S. 1949, Mount Vernon Washington College

Parrish, Lawrence Va.
B.S. 1950, University of Illinois

Parrish, Thomas William D.C.
Parrish, Sherman Warren Texas
Parrish, William Evans Va.
B.S. 1948, St. Vincent College (Pa.)
M.S. 1950, Ph.D. 1955, Georgetown University

Parry, James Llewellyn D.C.
A.B. 1950, The George Washington University

Parsons, Paul Evans Va.
Parsons, Thomas Joseph D.C.
B.S. 1950, The George Washington University

Parsley, Dana Jack Va.
Partridge, Prentiss Isaac Ill.
A.B. 1950, B.S. in L.S. 1951, University of Illinois
A.M. 1955, University of Chicago

Pascoe, Eugene Joseph Mass.
LL.B. 1950, Boston University

Pasmanik, Matthew Kalman Md.
A.B. 1954, The George Washington University

Passaloussis, Bernard Evan D.C.
Passavant, Thomas Henry Pa.
Passmore, Thomas Joseph Va.
Patchan, Benjamin Kenneth Pa.
Patchen, James Pa.
Patchen, Martin Pa.
Patchenmeister, Ian Alfred Va.
Patchin-Rumsey, Allyson Colombia
Patchin, George E.
Patchin, John Franklin Va.
B.S. 1955, University of Virginia Va.

Patchin, Marjorie E.
Patent, Stella D.C.
B.S. 1954, West Virginia Institute of Technology Md.

Patt, Andrew Jeremiah Md.

Patten, Franklin Willard — Ohio
A.B. 1921, B.S. 1941, University of Cincinnati

Patterson, Clinton Generous, Jr. — D.C.
B.S. 1952, Bluefield State College

Patterson, Frances Lancaster — D.C.

Patterson, Grace Elizabeth — D.C.

Patterson, Joseph William — Va.
A.B. 1884, The George Washington University

Patterson, Pattie S. — Iowa

Patterson, Theodora L. — D.C.
B.S. 1943, Hampton Institute

Patton, Guy Lester — Nebr.

Patton, Richard Donovan — Va.

Paugh, Ray Leon — D.C.

Paul, Jerome Thomas — Va.

Paulson, Eleanor Ruth — Wash.

Paulson, Mary Emma — D.C.

Pavlowski, Carl Joseph — N.Y.
B.S. 1938, Canisius University

Pawley, Olive Penke — Va.
A.B. 1911, Hope College

Paxler, Patricia Ann — Md.
A.B. 1952, The George Washington University

Payne, Claudia Ann — D.C.

Payne, Lawrence DeWitt — Va.

Payne, Margaret Louise — Mo.

Payne, Philip Louis — Va.

Payne, Robert Marr — Utah
B.S. 1938, Brigham Young University

Payne, Spencer Roscoe — Md.

Payne, William Wirt — Md.
B.S. in Engr. 1935, University of Virginia
M.S. in Engr. 1947, University of Michigan

Peabody, Alan — D.C.

Peach, Max Thomas — Texas

Peacock, Harold — D.C.
A.B. 1941, Columbia University
A.M. 1954, The George Washington University

Peacock, Jack Travis — Va.

Peacock, James Pendleton — Va.

Peake, Gerald Manning — D.C.

Peake, James Edward — D.C.

Pearl, Roxanne — Md.

Pearre, David Lyle — Ky.
A.B. 1954, Baylor University

Pearson, John Ford — Wis.
A.B. 1942, University of Wisconsin
M.I.A. 1948, Columbia University

Pearson, Lucia Meade — Md.
B.S. in Ed. 1935, Tufts College

Pearson, Theodore Buckly — Ky.

Pearson, Vernon Dawson — N.C.

Pearson, William Graham, Jr. — Ariz.

Peart, Lowell Lloyd — D.C.

Peart, Robert Wayne — Va.

Peaze, Bessie Jones — D.C.
A.B. 1931, Mills College
M.S. 1934, University of London

Peck, James Lee — D.C.

Peck, Lawrence Jacob — D.C.

Peckham, Charles Selden — D.C.

Peckham, Barbara — D.C.

Pecore, Joe Lewis — Oreg.
A.B. 1948, University of Washington

Pedan, James — Pa.
B.S. 1950, Thiel College

Pedas, Theodore — Pa.
B.S.B.A. 1951, Youngstown College
M.B.A. 1954, University of Pennsylvania

Pedersen, Arne Monk — Conn.

Pedersen, Grethe — D.C.

Pedersen, Wesley — Va.

Pederson, Harold Edward — Va.

Pegler, Caroline Rae — Wis.

Pegler, Jean Jefferson

Peery, Kenneth Edward
A.B. 1940, Kansas State Teachers College, Emporia
LL.B. 1950, University of Kansas — Mo.

Pegram, Thomas Edward III — Va.

Peiper, William Houston

Peixoto, Aurora Jay — D.C.

Pemberton, Esther Elizabeth

Pempel, Arlene

Pence, Ethel Byrne
A.B. 1927, Barnard College
A.M. 1942, Columbia University — Md.

Pence, Marion Minor
B.S. in M.E. 1949, University of Nebraska — Va.

Pelikan, Robert Grant — D.C.

Pell, Arthur Jack
B.S. 1952, The George Washington University — Md.

Pellen, Gustave Bernard, Jr. — Pa.
B.S. 1951, University of Maryland

Pelmoter, David Joseph
A.B. 1951, Wilkes College

Pelton, Shirley

Pemberton, Melissie Collins

Pemberton, William Charles — Va.

Pemberton, William Thomas

Pendleton, Byrd Page — Ga.
B.S. 1947, Longwood College

Pendleton, Catherine Ann

Pendleton, Kathryn M. — Ind.
A.B. 1935, St. Mary's College (Ind.)
A.M. 1951, University of Illinois

Pendrod, John Thomas — Va.

Penn, Joseph Edward
B.S. 1948, Miner Teachers College

Penners, R. Sheila
B.S. 1943, Wilson Teachers College

Pennington, Andrew M., Jr. — Va.

Pennington, Robert Lee — Va.

Pennington, Lewis — Va.

Penrod, Dale Everett, Jr. — Va.

Pentecost, Richard Livingston
A.B. 1953, The George Washington University — D.C.

Peppard, Matthew James
A.B. 1951, Harvard University — Conn.

Perchicko, Manuel — D.C.

Percival, Judith Ann — Calif.

Perdue, Uley Franklin — Va.

Perea, Alfonso — D.C.

Pereira, Alberto — D.C.

Perez, Cesar — D.C.

Perham, Jane Frances — D.C.

Perkins, David Mermod — D.C.

Perkins, Judith Lorraine — D.C.

Perlbachs, Mara — D.C.

Perlin, Elliott — D.C.

Perlman, Alan Monas — D.C.

Perlman, Marvin Morton — D.C.

Perlman, Phoebe Tolman
A.B. 1952, Mount Holyoke College — Mass.

Pernter, Nancy Lowe
Perrott, William Leroy — Va.
B.S., 1961, Georgetown University — Md.
Perreault, Helena Theresa
Perrens, Matthew Phillip — Maine
Perrine, Diane Patricia — Md.
A.B., 1955, San Francisco State College — Calif.
Perrotte, Joseph Loran — Texas
A.B., 1942, Stephen F. Austin State College
Perrott, Patricia Anne
Perrott, Thomas Andrew — Va.
Perrotti, Jean Barry — Va.
A.B., 1954, The George Washington University — D.C.
Docteur de l' Universite 1954, Grenoble, France
Perrow, James Stephen
A.B., 1957, Wake Forest College — Md.
Perry, Albert McLees
A.B., 1942, The Citadel — Md.
Perry, Matthew White, Jr.
Perry, Robert Raymond — D.C.
B.S. in E.E., 1941, Michigan State University — Mich.
Perry, Robert Sawyer
Perry, Stanley Pinson
A.B., 1956, Limestone College — Va.
Perry, Stanley Dayward — Va.
A.B., 1955, The George Washington University — Okla.
Perry, Vernon Paul
Perry, William Oliver — Md.
Persons, James Alfred — D.C.
Persons, Edith Evangeline — D.C.
Persons, Dorothy — D.C.
Persolja, Theodore Edward — Texas
B.S., 1954, Howard University — N.Y.
Persol, Margaret
Persons, Irwin Bernard — Pa.
Pervall, Joseph Francis — D.C.
Peter, Hildegarde Berenice — Pa.
Peter, Paul Francis — D.C.
B.S., 1928, Syracuse University — Va.
Peters, Aubrey D.
A.B., 1956, A.B., 1955, Shepherd State College — W.Va.
Peters, Charles William
A.B., 1956, Indiana University — D.C.
Peters, Dorothy Ellen
A.B., 1954, The George Washington University — D.C.
Peters, Edmund LeRoy
B.S., 1952, Morgan State College — D.C.
Peters, Frances P.
Peters, Lorraine Maria — Pa.
Peters, Reginald Earl, Jr. — D.C.
A.B., 1956, University of Pittsburgh — Va.
Peters, Virginia
A.B., 1952, Florida State College — D.C.
Petersen, Donald Edwin
Petersen, Edwin M., 1953, Purdue University — Md.
Petersen, Lois Lorraine
Petersen, Nancy Douglas — Va.
A.B., 1954, University of Minnesota — Mass.
Petersen, Henry Edwin, Jr.
Petersen, Kent Alfredo
Petersen, Marion Quimby — Va.
Petersen, Ruth B. — Md.
Petersen, Ward Joseph — D.C.
B.S., 1934, U. S. Naval Academy — D.C.

Peterson, William Thomas, Jr. — Va.
Petersmeyer, Warner Leland — Md.
B.S., 1950, Texas Technological College
Ph.D., 1954, Northwestern University
Petit, Ernestine — Va.
B.S., 1955, Wilson Teachers College
Petit, John — Va.
B.S., 1947, College of the City of New York
LL.B., 1952, The George Washington University
Petitack, John Andrew — Md.
Petrillo, Beatrice Felpeto — D.C.
Petrum, Albert Anthony — D.C.
Petrie, John Joseph — Va.
Petrushansky, Hanna Helaine — D.C.
Petrusza, Andrew, Jr. — N.J.
Petrycka, Josephine Anne — D.C.
A.B., 1951, The George Washington University
Petters, Sofia Pauline — Va.
A.B., 1948, University of North Carolina
Pettigrew, Hugh McCleland — D.C.
Pettit, Ada S. — Va.
Pettit, Charles Albert — Md.
Pettit, Jean Grace — Mo.
Pettit, Judge Whitney — D.C.
Petty, Barbara Rose — Va.
Petty, James Spillman — Va.
Pfaender, Ralf George — D.C.
Pfendler, Neal Jay — Pa.
Pfaff, Richard Lee — Ind.
B.S., 1951, Indiana University
Pfeffer, Richard Michael — Pa.
A.B., 1948, University of Pittsburgh
Pfeffer, Walter Albert — D.C.
B.S., in Engr., 1950, University of Connecticut
Pfeiffer, Flora Georg — D.C.
Pfleeger, James Henry — Va.
A.B., 1954, The George Washington University
Pfleegner, Stephen Douglas — Ind.
A.B., 1948, Butler University
Pflueger, Patricia Ann — D.C.
Pflueger, Paul James — Pa.
A.B., 1947, Pennsylvania State University
Pham, Thuc Thi — Hawaii
Pharis, William Byron, Jr. — D.C.
Pharmes, John Wilson — Md.
B.S., 1947, M.B.A., 1948, University of Oklahoma
Pharon, Chas Y.
Phelps, Maurice Rush — Md.
A.B., 1929, Colleges of William and Mary — Va.
A.M., 1930, University of Chicago
Phelps, Lucia Greenville — Va.
Phelps, Patrick John — Ariz.
Phelps, Virginia Rachel — Va.
A.B., 1948, Hanover College
LL.B., 1951, Georgetown University
Phelps, Jeanette Argyro
Phelps, Helen Irene — D.C.
A.B., 1948, Colleges of William and Mary — Va.
A.M., 1954, The George Washington University
Phelps, Johnnie Bliss
Phillips, Leonard Raymond — Md.
A.B., 1943, Bowdoin College — Mass.
Phillips, Phyllis Jane
Phillips, Alvin Ray — Md.
Calif.

Phillips, Anna Ruth Fairchild D.C.
A.B. 1952, University of Kentucky
Phillips, Attila Fielder, Jr. Md.
B.S. 1947, Clemson College
Phillips, Barbara Barnes D.C.
Phillips, Charles Edward D.C.
Phillips, Elizabeth Catherine Va.
Phillips, Helen Garson Ill.
Phillips, Jane Evelyn Colo.
A.B. 1948, University of Denver
Phillips, John Ind.
Phillips, Leonard Rudisill Iowa
A.B. 1941, Yale University
Phillips, Mary Jane Va.
B.S. 1954, University of Pennsylvania
Phillips, Monica Robert Md.
Phillips, Robert Dean Ala.
B.S. 1948, Howard College
Phillips, Russell Lee Ohio
Phillips, Samuel Lewis D.C.
A.B. 1951, University of Chicago
LL.B. 1952, National University
Phillips, Thomas Madison Ga.
B.E.E. 1942, Georgia Institute of Technology
Phillips, Tuscenew Lahti Md.
B.S. 1954, Northeastern University
Phipps, Ida Wilson N.H.
B.S. in E.E. 1926, University of New Hampshire
Phoenix, Julia Wilbert Va.
B.S. 1923, Harvard University
Pickard, Louise Donathen D.C.
Pickenpaugh, Harry Irvin Va.
Pickerodt, Jeanne Lee D.C.
Pickerodt, Marion D.C.
Pick, Dean D.C.
Pickrell, Elizabeth Va.
Pickrell, John Wesley, Jr. Md.
Pickrell, Nan Maguire D.C.
Pickrell, Stanton Thurlow Md.
Pickrell, Ward William D.C.
Pierce, Carol Lucille Md.
Pierce, Karl Bailey Va.
A.B. 1943, Westminster College
Pierce, Elmer Hendley Va.
Pierce, Frank Hendren III Md.
B.S. 1952, Maryland State Teachers College, Salisbury
Pierce, Geraldine Marie D.C.
Pierce, Joseph LeRoy D.C.
Pierce, Patricia Lenore Kans.
A.B. 1954, Colorado College
Pierce, Stanley Williams Nev.
B.S. 1944, University of Utah
Pierdon, Florence May D.C.
Pierdon, Margaret Jean D.C.
Pierpont, Thomas Joseph Va.
Pierson, Patricia Joyce D.C.
A.B. 1954, Randolph-Macon College
Pierrak, Michael Edward N.Y.
B.S. 1951, Rensselaer Polytechnic Institute
Pierrakeas, Euripides Va.
Pierrot, Richard Lloyd Va.
B.S.E. 1951, University of Mississippi
Pilat, Jane Culpepper D.C.
Pilcher, Robert Lawrence Va.
A.B. 1949, Georgetown College
Pilson, Bertha Hope Fitzallen D.C.
Pincus, Sigmund Richard D.C.
Pinson, Walter Haskell N.Y.
A.B. 1951, Yale University
Pinsky, Hugo Va.
Pinsonneault, Richard Collins Md.
B.C.E. 1948, Northeastern University D.C.
Pintar, George Bohman
B.S. 1951, The George Washington University
Pinter, Lloyd Christian Md.
B.S. in Ed. 1952, Florida State University
Pinto, Albert
Piper, Jasper Francis Va.
Pistone, Joseph Vincent
B.S. in Phar. 1954, The George Washington University
Pitkin, Lucilan Lockhart
Pittenger, John Wirth
B.S. 1951, Georgetown University
Pittenger, Wayne William Va.
Pitz, Henry
Pitz, Henry
B.S. 1932, The George Washington University
Pittman, Mary Ann
Pittman, Mary Thomas
A.B. 1914, Duke University
Pitts, Robert Sandy
Pittsinger, Thomas Mabie
Pitzer, Leonard Irwin
A.B. 1954, Harvard University
Pizzi, Claudia Dorothea
A.B. 1948, Westminster College
Placzek, Henry Clement
B.S. 1952, Juniata University
Plant, Cleveland Isaac
Plant, Regina Fonda
Plant, Robert Jay
B.S. 1950, College of the City of New York
A.M. 1958, Columbia University
Platou, Ingmund Hakon
Platou, William Oscar III
Platt, George Boyd
B.S. 1950, Rensselaer Polytechnic Institute
Plautinger, Raymond Hyacinth, Sr.
A.B. 1929, Duke University
Plein, Lee Williams
Plenkovich, Ivo
B.S. 1950, Michigan State University
Plentzas, Gregory Leonidas
B.S. 1950, University of Maryland
Plesha, Edward Wenceslaus
Plesnarski, Walter Irvin
LL.B. 1950, Temple University College of Commerce
Pleuthner, Lawrence
B.P.E. 1952, The George Washington University
Plumb, Clarence Page
Plumb, Ruth Ann Ingeler
A.B. 1933, University of Rochester
A.M. 1948, The George Washington University
Plumley, Arthur Richard
Plummer, Edith Eugene Va.
A.B. 1935, Westmont College
Pocalyko, Leonard Nicholas N.Y.
A.B. 1950, A.M. 1954, Syracuse University
Pochal, William Gene

Podolsky, Walter, Jr.
B. Science, Univ. 1952. B.C.E. 1954. Penn. College — Md
Poe, Edgar Allen, Jr. — Va
Poe, Hilda Jones — Md
Poe, Warren Clayton — Md
Poehner, Lena Beatrice — N.Y.
Poggio, William Edward — Md
A.B. 1955, Williams College
Pohl, Walter George — Va.
Poindexter, Bernard Paul — Va.
Poindexter, Stephen — Md.
A.B. 1954, The George Washington University
Polish, Conny
Pollack, Louis Charles — N.Y.
Pollard, Norman — N.J.
B.S. in Ed. 1939, A.M. 1941, Boston Teachers College — D.C.
Pollock, Stephen, Anthony
Pollock, Jerrold Bernie — Pa.
Pollock, Lenora Rosenstein — D.C.
A.B. 1948, Catholic University
Pollock, Lewis Murphy — Md.
A.B. 1951, Mount St. Mary's College
Pollock, Thomas Nelson, Jr. — Va.
A.B. 1954, University of Richmond
Pollock, William George — Va.
Polo, Anne Sisko — D.C.
Pomeroy, Irene — D.C.
B.S. 1948, M.S. 1949, Catholic University of America — D.C.
Ponsler, Clarence Foster, Jr. — Md.
B.S. 1950, U.S. Naval Academy
Pontius, Joseph Lester — Pa.
B.S. 1954, Grove City College
Poole, Ray — D.C.
Poole, Thomas Leonard — Maine
B.S. 1948, University of Maryland
M.A. 1949, The George Washington University
Pope, Marion Hodgson — D.C.
A.B. 1950, Randolph-Macon College
A.M. 1951, Harvard School of Law and Diplomacy
Popham, Robert Henry — N.J.
Popkin, Isadore Arthur — Va.
Popkin, Lewis Lee — Md.
A.B. 1948, Randolph-Macon Woman's College — Tenn.
Porter, William Alfred — Md.
Porter, Mary Ann — Va.
Porter, Thomas Edward — Va.
B.S. 1951, University of Virginia
Porter, Thomas Henry — Va.
B.S. 1952, The George Washington University
Portner, Walter Rubin — Va.
A.B. 1944, Lynchburg College — Mass.
Posner, Edgar, Harvard University
Posner, Ethan Henry — D.C.
B.S. 1951, University of Maryland — Md.
Post, Bruce Alexander — Va.
Post, Thomas Morris — D.C.
A.B. 1954, The George Washington University — Kans.

Potter, William Matthew — Fla.
A.B. 1950, University of Connecticut
Pottenfield, Marguerite — Va.
Pottenfield, Mary Wanda — D.C.
A.B. 1950, Longwood College
Pottenfield, Robert James — Va.
Pottenfield, Virginia Peyton — Va.
Pottenger, Jesse Arlene — D.C.
Pottenger, Alvin — D.C.
Pottenger, Cordelia — D.C.
Pottenger, Frederick Carl — D.C.
Pottenger, Mercia Alberta — Colombia
A.B. 1953, Colegio Benchmans, Colombia
Potter, Jerome Gladstone — Texas
Potter, Joseph John — D.C.
Potter, Florence — D.C.
Potter, Herbert S. — Md.
B.S. 1942, College of the City of New York
M.S. 1954, Purdue University
Potter, Israel — Israel
B.S. 1955, The George Washington University
Potts, George Roebuck — N.Y.
Potts, Jesse Russell — Pa.
Potter, Marvin John — Calif.
A.B. 1954, Stanford University
Potter, Robert Joseph — Nev.
A.B. 1954, University of Nevada
Potter, William Joseph — D.C.
Potts, Calvin Cunningham — Va.
Potts, Forrest Hammond — Mass.
A.B. 1949, University of Montevallo
A.M. 1950, Columbia State College of Education
Potts, John Brooks — W.Va.
A.B. 1950, Dartmouth College
Pouquette, Lincoln Antoine — Va.
Powell, James Boyd — Iowa
LL.B. 1950, National University
Powell, Raymond Berg — Va.
Powell, Ely — D.C.
Powell, Elton M. — D.C.
Powell, Jane Theodore — Va.
A.B. 1950, University of Washington
Powell, Rathbone Bowling — D.C.
Powell, Melville Bennette — D.C.
Powell, William Alfred — D.C.
A.B. 1951, 1952, Wesleyan University
A.M. 1953, Williams College
Powhatan, Jesse Pulton — Va.
A.B. 1949, A.M. 1950, Ph.D. 1954, Harvard University
M.B.A. 1951, University of Pennsylvania
Poynter, Henry Clinton — Va.
A.B. 1951, Cornell University
Pozen, Alvin Maxwell — D.C.
Prasanna, James Murphy — Va.
Prasanna, John Jerry — Va.
Prasanna, Lawrence Wilson — Pa.
Prasanna, George Anthony, Jr. — Md.
Prather, Milton Arthur — D.C.
Prattapadungsak, Sukhai — Thailand
B.Com. 1954, Melbourne University, Australia
Preble, Thomas Arthur — Bolivia
Prentice, Revolton Simmons — D.C.
Prete, George Joseph — Va.
B.S. 1948, University of Maryland
Prettyman, John Barnes, Jr. — D.C.
Prettyman, Dorothy Conner — Md.

Prencipe, Nicholas Vincent — Md.
B.S. 1950, The George Washington University
Prensky, Bernard Mortimer — Md.
Prensky, Rhona Perlov — Md.
Prentice, Isley — N.Y.
Prescott, Lawrence M. — D.C.
Press, Frances Barbara — D.C.
Press, Harvey Benjamin — D.C.
Presson, Homer Kent — Va.
A.B. 1939, Texas Institute of Technology
LL.B. 1949, Georgetown University
Preston, Jerry Mavronne — N.Y.
B.I.E. 1952, New York University
Preston, Frank Monroe — D.C.
Preston, Henrietta Louise — Md.
Preston, Herbert — N.Y.
A.B. 1947, Cornell University
Preston, Martha Claudia — D.C.
Preston, Samuel Ralph — Md.
B.S. 1950, University of Maryland
Prete, Lucy Theresa — D.C.
Pretsch, Odessa Lee — D.C.
B.S. 1946, Kansas State College
Price, Alice Stevenson — Ind.
A.B. 1948, The George Washington University
Price, Carole Sue — D.C.
Price, Ella Louise — N.Y.
Price, Jessie Ariel — Tenn.
Price, Miriam Davis — Va.
A.B. 1953, Goucher College
Price, Richard Allen — Fla.
Price, Robert George — D.C.
Price, Thomas Edward — Mich.
Prichard, Carolyn — D.C.
Prichard, Donald Lee — Ky.
Priebe, Irene Elizabeth — Mo.
A.B. 1947, Dunbeane College
Priest, Carol Frazier — Ind.
Price, Thomas Harold — N.Y.
Prigoff, Jason Carl — Mass.
A.B. 1954, Tufts College
Primm, Albert Rowland — Pa.
Primm, Anna May Threshill — D.C.
Primm, George Rollyn Mike — Va.
Primm, Jack Kendall — Va.
A.B. 1950, University of California at Los Angeles
Printzlau, Robert Elston — Va.
Prisbrey, Daniel Medford III — D.C.
B.S. 1950, Morgan State College
Prisinzano, Theodora Jean — D.C.
Pristo, George William — Md.
B.S. 1951, Drexel Institute of Technology
Prochnik, Adolf — D.C.
Doctor of Law 1924, Masaryk University, Czechoslovakia
Proctor, Donald Garfield — Va.
B.S. in B.A. 1951, University of Florida
Proctor, Paul Hite — Ky.
Prodromides, Urania Doris — Md.
Proett, Richard Justin — N.Y.
Profitt, William Nelson — Va.
Profitt, Henrietta L. — Md.
Prosnitz, Leon Robert — Pa.
Protopapadakis, Stylianos Demetrios — Greece
B.S. 1951, Wagner Memorial Lutheran College
A.M. 1951, Ph.D. 1954, The George Washington University

Protos, Matthew James — Md.
Proudfoot, Herbert — D.C.
Prusaczyk, Henry — Md.
B.S. in Ch.E. 1951, Washington University
Pruzek, Stanley — Md.
Pryor, Eleanor Bruce — D.C.
B.S. 1954, Miner Teachers College
Pryor, James Lawrence — Va.
Pryor, Thomas Brady — Va.
Pryor, William Thurman
B.S. in C.E. 1950, University of Vermont — Md.
Psaltis, Margaret Mary
B.S. 1952, The George Washington University — Texas
Puccini, Joseph Elmer, Jr. — Pa.
Puchnick, Barbara Lorain — Pa.
Puchnick, Kathleen Mary — Pa.
Puckett, Kenneth Wayne — Tenn.
Puckett, Robert H., Jr. — Pa.
Puckham, Charles Seldon — Va.
Puff, Paul Rutledge — Pa.
Puffenberger, Richard Preston — N.Y.
Pulicicchio, Louis Umile
A.B. 1954, Columbia University — D.C.
Pulman, Peter Boothe, Jr. — Calif.
Purcell, Theodore Robert
A.B. 1950, B.S. 1951, University of California — Md.
Purdue, Rudolph Bachman
A.B. 1950, Princeton University
A.M. 1952, Columbia University — Mass.
Purdy, David Murray — D.C.
A.B. 1953, Bates College — Va.
Purdy, Ramon Tom — Va.
Pursinger, Anne Louise — Va.
A.B. 1952, Furman University
Putnam, Earle Westgate — Va.
A.B. 1950, Dartmouth University
Putnam, Joicey Michelle — Pa.
Putnam, Marion Glennda — Iowa
Putz, Candace Niswander — Iowa
A.B. 1927, University of Iowa — Ohio
Putz, James Eugene
Pyeatt, Nancy — D.C.
B.S. 1951, St. Mary's College (Kansas) — Va.
Pyle, John Bruce — Va.
Pyle, Leland Alonzo
A.B. 1955, The George Washington University — Va.
Pyles, LeRoy Andrew
B.S. in Com. 1951, University of Virginia — Va.

Q

Quackenbush, Elizabeth Ann
A.B. 1954, The George Washington University — N.J.
Quagliano, Gerard Joseph — Va.
Quails, Lawrence Herbert, Jr. — D.C.
A.B. 1952, Vanderbilt University — Ind.
Quarles, Allen Swanson — N.J.
Quibuyen, Nancy — Phil.
Queenan, Patricia Ann — Pa.
A.B. 1952, Trenton College
Quenzler, Lorraine Adrienne — Calif.
Ph.B. 1952, University of San Francisco
LL.B. 1954, Antioch University — Mass.
Quesey, Anthony Lindsay — Md.
Quick, George Ryan
B.S. 1950, University of Maryland

Quick, Lila Katharyne Va.
Quigg, Barbara Lee Va.
A.B. 1956, The George Washington University
Quigley, Harold D.
Quigley, Lillian Fox Va.
Quigley, Rosina M. Murray D.C.
Quinn, Edith Irwin D.C.
B.S. 1950, Alabama Polytechnic Institute Ala.
Quinn, Eugenia
Quinn, Gertrude Patricia Maine
B.S. 1943, Fordham University Md.
M.S. 1945, University of Rochester
Quinn, Gwendolyn Cutler
Quinn, Harold Eugene D.C.
A.B. 1950, Maryland State College Md.
Quinn, Lane Joseph, Jr.
Quinn, Mary Therese D.C.
A.B. 1950, Trinity College D.C.
Quinn, Patricia Frances
Quinn, Thornton Downey, Jr. Va.
Quinn, Thurston Hopkins Md.
Quinnett, Lida Wilson Md.
A.B. 1950, The George Washington University D.C.

R

Raad, Mia Hassan Lebanon
A.B. 1956, University of Utah
Rabin, Joseph Edward N.Y.
A.B. 1957, The George Washington University
Rabke, Richard Manford
B.E.E. 1950, Cornell University Va.
Race, James Madison
B.S. 1949, Long Island College Va.
Rachford, Carson Rowland
B.S. 1950, University of Oklahoma N.Y.
Rachmiel, Mark Lester
Rachmiel, Peter Henry D.C.
A.B. 1952, Montana State University Pa.
Racicot, Joe A., Jr. Mont.
Racine, Eugene Frederic
Racine, Raymond Vincent W.Va.
Radcliffe, Theodore Va.
Radcliffe, Thomas Patrick Pa.
Radcliffe, Richard Irving D.C.
A.B. 1951, Oglethorpe University Ga.
Radcliffe, Frank Sumner Ohio
B.S. 1954, University of Maryland Calif.
Radcliffe, Sadie Lane
Radcliffe, Rosa Amelia D.C.
B.S. 1949, South Carolina State College
Radcliffe, Wayne Adamson Va.
A.B. 1948, The George Washington University Va.
Radcliffe, Benjamin Harry
Radcliffe, Fred Irvin Ind.
Radcliffe, Raymond Charles D.C.
Radcliffe, Thomas Va.
LL.B. 1950, Strayer University
Radcliffe, [illegible] at Washington D.C.
A.B. 1951, The George Washington University
Radcliffe, Maurice Freeman
A.B. 1951, St. Anselm's College N.H.

Radley, Anna Loretta Ark.
Radley, Elmer Terrell Va.
Radmore, David Ray Okla.
Radmore, Harry Michael N.J.
Radtke, John Haywood Va.
Radwin, John Wyatt D.C.
Radzinski, Jorge Marshall D.C.
Radzinski, Richard Alfred N.M.
Radzius, James Matthew Va.
Radzius, Thomas Anthony Va.
Raeburn, Albert British Guiana
Raeburne-Gilmour, Kenneth D.C.
Raemsch, James Rockwood D.C.
Raemsch, Walter George Va.
A.B. 1950, Princeton University
Raemsch, Charles Ellen Pa.
Raemsch, Norman Lee Md.
Raemsch, Sister Irene Ireland
A.B. 1955, Penrith University
Raeuchle, Kamal Ramchandra D.C.
A.M. 1947, University of Bombay
Raeuchle, Vincent Ferner D.C.
Raeuchle, Virginia Chew Ohio
Raeuchle, Gregory Xavier Mass.
Raeuchle, John Hudson D.C.
Raeuchle, William A., Jr. Md.
Raeuchle, Mabel Wyckoff Md.
Raeuchle, Benjamin Owen, Jr Md.
Raeuchle, Charles C. Sue Va.
B.S. 1950, University of Tennessee
Raeuchle, James Lewis Va.
Raeuchle, Margaret Louise Md.
B.S. 1951, Asheville Normal and Teachers College
Raeuchle, Lloyd Thomas Mexico
Raeuchle, Martha Gilder Va.
A.B. 1954, University of Maryland
Rafi, Mosin India
A.B. 1948, M.A. 1950, Maharaja's College, Mysore City, India
Rafner, Marilyn Ayers
Rafner, Richard Wayne D.C.
Raffensperger, Lucy Lane Va.
Raffensperger, Rodney Ray N.Y.
Raffensperger, James Ray N.C.
A.B. 1951, Hanover College
Raffensperger, Lockhart Arnold N.C.
A.B. 1951, University of North Carolina
Raffner, Maynard Brandon Va.
B.S. in E.E. 1953, The George Washington University
Raffner, Minnie Tod Ohio
B.S. in Ch.E. 1946, Case Institute of Technology
LL.B. 1954, The George Washington University
Raffner, Anna D.C.
B.F.A. 1948, College of the City of New York
A.M. 1950, New York University
Raffoul, Jeanne Edwin Wash.
A.B. 1951, Brigham Young University
Raffo, William Eugene, Jr. Md.
Raffo, Lucian Raymond Joseph Va.
A.B. 1949, Hampden-Sydney College
Raffo, Dorothy
Raffo, Michael Paul D.C.
A.B. 1951, University of South Carolina D.C.

Rasmussen, Paul Christian D.C.
A.B. 1948, LL.B. 1951, University of Michigan
Rasmussen, Walter Samuel Va.
B.C.E. 1932, University of Wisconsin
Rasper, Raymond Md.
Rassiche, Edouard Eugene Mass.
A.B. 1932, New England College
Rathbone, Helen Collin D.C.
Rathbone, Walter Cox N.M.
LL.B. 1924, Georgetown University
Rathbone, Edward Alan D.C.
Ratay, Ernestine Allen Wash.
B.S. 1944, U. S. Coast Guard Academy
Ratz, Richard LeRoy N.D.
A.B. 1941, Wooster College
Rauch, Erick Robert Va.
Raum, Jack Randall D.C.
Raum, William Jens Pa.
Raum, Virginia Lawrence Va.
Rawlings, Peggy Marilyn D.C.
B.S. 1954, Wilson Teachers College
Ray, Charlotte R. D.C.
Ray, Hugo Walter D.C.
Ray, Lynn Barbara D.C.
Ray, William Earl Md.
Rayfield, Phillip Leon Md.
B.S. 1953, North Carolina Agricultural and Technical College
Rayner, Thomas Wallace Md.
A.B. 1923, Dickinson University
Raymond, John Joseph N.Y.
B.S. 1951, Hartford College
A.M. 1953, College for Teachers at Albany
Raymond, Mark Bradford Md.
B.S. 1951, University of Maryland
Raymond, Roberta Mary D.C.
B.S. 1953, Shrewsbury University
Ray, Gertrude D.C.
Diploma de Licencia en Drogo 1947
Diploma de Licencia 1951, University of Barcelona
Licentiate 1951, University of Paris
Ray, Robert Wayne D.C.
Raymond, Norbert John D.C.
Read, Charles Hamilton N.J.
A.B. 1951, Norwich College
Reade, Eleanor Morrison N.Y.
Reagan, George Raymond Va.
A.B. 1950, Randolph-Macon College
A.M. 1951, Boston College
Reagan, Ruth Elaine D.C.
Reardon, Thomas Emmanuel Va.
Reagan, Marianne D.C.
Reddy, Lawrence Joseph N.Y.
B.C.E. 1954, Manhattan College
Reams, Robert Bruce D.C.
Reames, Robert Kirby Va.
Rebhun, Earl Edward D.C.
Reese, Alfred Ruane Md.
LL.B. 1949, American University
Reed, Dorothy L. Va.
Reese, Mary Elizabeth Va.
Reeves, Dora Thomas D.C.
B.M. 1951, University of Rochester
Reed, Donald Harry Md.
A.B. 1952, Ed.M. 1954, University of Maryland
Redding, Lester Allen Calif.
Redding, Marian Elizabeth Md.
Redes, Anastasio Paraguay

Redfearn, Nancy Taylor Md.
Reed, Marjorie E. N.Y.
Reed, Benjamin Alston D.C.
A.B. 1934, Clark University
Reed, Elizabeth Adelaide Va.
Reed, Julian Leonard D.C.
Reed, Lucille Lucas Va.
Reed, Margaret Morrison D.C.
Reed, Marian Hilleke Va.
A.B. 1945, Stanford University
Reed, Robert Hammond Calif.
B.S. 1944, The George Washington University
Reeder, Charles Joseph N.Y.
A.B. 1951, Syracuse University
Reedy, Sandra Jane Mass.
Reeks, Warren McKenzie Md.
A.B. 1954, Alfred College
Rees, Sherman James
B.S. 1926, Springfield College
A.M. 1930, Columbia University D.C.
Rees, William Lemuel Md.
Reese, Howard C.
A.B. 1948, A.M. 1954, New York University Va.
Reese, James Cargill
A.B. 1954, The George Washington University W.Va.
Reese, Matthew Anderson, Jr. Ga.
A.B. 1950, Morehead College
Reeves, James Hooper, Jr. Md.
B.S. 1947, U. S. Military Academy
Reeves, Lawton Mae Md.
Reeves, Patricia Jean Md.
Regan, Francis D.C.
Regan, Robert D.C.
Reginelli, Donald H. D.C.
B.S. 1951, Georgetown University
Reginelli, Jean Ruth
A.B. 1954, The George Washington University D.C.
Reh, James
A.B. 1951, The George Washington University D.C.
Reich, Joseph Daniel Calif.
A.B. 1950, The George Washington University
Reichley, Floyd Lindsay D.C.
A.B. 1951, Wilson College Md.
Reichman, Lucille Virginia
Reid, Alexander Bruce Va.
A.B. 1950, The George Washington University
Reid, Evelyn Frances
A.B. 1948, Virginia Union University Va.
A.M. 1953, New York University Va.
Reid, John Calhoun
Reid, Joseph Bernard Md.
A.B. 1950, A.M. 1951, The George Washington University D.C.
Reid, Mildred Miller Md.
Reid, Phyllis Marion Va.
A.B. 1949, University of British Columbia Calif.
Reid, Robert David
Reid, Rodney Howard D.C.
A.B. 1951, University of California Va.
Reid, Thomas Md.
Reidy, John Cornelius, Jr.
Reilly, Katherine G.
B.S. 1950, LL.M. 1954, University of Maryland

Reppert, John Elmer
B.S. 1928, U.S. Military Academy N.J.
Reppie, Marion Kelly
A.B. 1928, Mount Mercy College Pa.
Reppie, Lawrence Thomas
B.S. 1928, University of Wyoming Calif.
Reppie, Robert Dana, Jr.
B.S. 1928, Rensselaer Polytechnic Institute N.Y.
Reilly, Marion Lawrence
B.S. 1928, Oregon State College Oreg.
Reilly, Walter Cotton
Zion City Va.
Reilly, Henry Harold, Jr. D.C.
Reilly, Lorraine Rose Calif.
Reilly, Lucy William Henry Md.
Reilly, Florence Wilson Pa.
Reilly, Robert Lee, University Va.
Reilly, Robert Stone, Jr.
Reilly, Mary D.C.
Reilly, Mary Maybel D.C.
Reilly, Rosemary Helen N.Y.
Reilly, Rosemary Lenora D.C.
Reilly, Thomas Vincent N.J.
Reilly, William Dabb Calif.
Reilly, Rose D.C.
Reilly, Thomas H. Wash.
Reilly, Robert Stanley
Reilly, Ruth, Franklin and Marshall College Pa.
B.S. 1924, U.S. Naval Academy
Reimenschneider, Rocco Harmon Va.
Reimer, Lenora Dorothy
Reimer, Margaret Jean D.C.
Reimer, Norman Joseph Md.
Reimer, Rose Pauline D.C.
Reimer, Ruth Marguerite Md.
Reimer, Elmer V.
B.S. 1928, Virginia State College Va.
Reimer, Fred Herbert, Maryland College
Reimer, Fred Herbert D.C.
Reimer, Irene Hubbard
A.B. 1928, Transylvania College Va.
Reimer, Lucy Elizabeth
B.S. 1928, Butler College Ind.
Reimer, Ruth Rebecca
Reimer, Wilbur Ralph
B.S. 1928, Wittenberg College Ohio
Reimer, Reinhart Henry
A.B. 1928, Western Reserve University
Reimer, Richard Henry
A.B. 1927, A.M. 1928, The George Washington University Ind.
Reimer, Lucy Marshall
Reimer, Harold George
B.S. 1928, University of Utah Australia
Reimer, Thomas Wilson Utah
Reimer, Henry Augustus III
A.B. 1928, The George Washington University Va.
Reimer, Irene Catherine Va.
Reimer, Rose Hannah
Reinecke, Pauline Welton
Reinecke, Ruth Gallup N.Y.
Reinecke, Clara Conrad D.C.
Reinecke, Ruth Reed Md.
B.F.A. 1928, University of Toledo N.Y.
Reinecke, Arthur Edward Ohio
Reinecke, Edward Frederick
Reinecke, Florence Louise D.C.
Reinecke, Frederick Edward
Reinecke, Frederick George
Reinecke, Louise Frances
Reinecke, Mary Louise D.C.
Reinecke, Ruth Louise
Reinhardt, James Edwin D.C.
Md.
Md.

Reynolds, Lawrence Patrick
A.B. 1923, University of Maryland Md.
Reynolds, Mary Charles D.C.
Reynolds, Ford Joseph Ind.
B.S. Ag. 1924, M.S. 1924, Purdue University
Reynolds, Hughes Mary Va.
Reynolds, Deborah Adine D.C.
Reynolds, Edward Frederick D.C.
Reynolds, Representing Attorney Va.
Reynolds, John Charles Pa.
B.S. 1928, St. Francis College
Reynolds, Mary Jane Va.
Reynolds, Rosalind Ada Va.
Reynolds, Arnold Hastings D.C.
B.C.E. 1929, College of the City of New York
Reynolds, Lois Fayne Md.
A.B. 1926, A.M. 1927, The George Washington University
Reynolds, Solomon Pinckney
Reynolds, Townsend Adolph D.C.
Reynolds, Margaret Blandon Va.
A.B. 1929, Howard College D.C.
Rezin, Charles Thomas
Rezin, Sally Ann D.C.
Rezin, Charles Thomas, Jr. D.C.
Rezin, Thomas Joseph D.C.
B.S. 1928, Worcester Polytechnic Institute Mass.
Rhea, Edward Vincent
Rhea, Frances Fay D.C.
Rhea, Florence Winifred D.C.
Rhea, Mary Lemley D.C.
B.S. 1929, U.S. Merchant Marine Academy Va.
Rhea, Gertrude Bruce
Rhea, Jean Elizabeth Va.
Rhea, Jean Virginia D.C.
Rhea, John Luther Md.
Rhea, Mary Montgomery Md.
B.S. 1928, Columbia Institute of Technique D.C.
Rhea, Mary Eudora Md.
A.B. 1926, Penn Treaty University
A.M. 1929, Oberlin College
Rhea, Lucy Pearl D.C.
B.S. 1929, Pennsylvania State Teachers College
Rhea, Rebecca Mitchell
Rhea, Robert Lee D.C.
B.S. 1928, Alfred University Md.
Rhea, Virginia
A.B. 1928, Stanford University
A.M. 1929, Columbia University
Rhea, Virginia Russell
Rhea, Jane Bruce D.C.
Rhea, Kenneth Walker D.C.
C.E. 1929, University of Cincinnati Va.
Rhea, Peter Mitchell
Rhea, Richard Hodge Va.
A.B. 1929, University of California at Los Angeles Va.
Rhinehart, Lawrence Rust
Rhinehart, William Palmer Va.
Rhinehart, William Morgan D.C.
Rhinehart, Charles LeRoy Va.
B.S. 1929, Virginia Polytechnic Institute Va.
B.M.E. 1924, LL.B. 1926, University of Kentucky
Rhoads, Julia Lamb
Rhoads, Joseph Williams D.C.
Rhoads, Joseph Isabela, Jr. Ky.
B.S. 1927, University of Missouri Va.

Richards, Lois Compton Va.
Richards, Margaret Bostick D.C.
Richards, Robert Leroy D.C.
A.B. 1952, Kansas Wesleyan University
A.M. 1954, University of Kansas
Richards, Stanley Haworth D.C.
A.B. 1951, The George Washington University
Richards, Suzanne Virginia D.C.
Richards, William Robert D.C.
Richardson, Ada Ann Va.
Richardson, Anna E. N.H.
Richardson, Beatrice G. D.C.
A.M. 1952, Columbia University
A.B., 1947, North Carolina State Teachers College
Richardson, Ford, Jr. Va.
B.S. in C.E., 1940, West Virginia University
M.S. 1948, State University of Iowa
Richardson, George Melvin Va.
A.B. 1936, Lingnan University
A.M. 1951, Columbia University
Richardson, Gordon Albert Md.
Richardson, Henry Adrian D.C.
Richardson, Henry Lawrence D.C.
A.B. 1938, Bates College
Richardson, Hugh O'Neal Ga.
Richardson, Ismay Pearsall Va.
Richardson, Jean Truman Okla.
A.B. in Journ. 1947, A.M. 1951, University of Oklahoma
Richardson, Laverne Hosen Calif.
Richardson, Mary Edwin Colo.
A.B. 1951, Western State College of Colorado
Richardson, Mary Catherine D.C.
Richardson, Oline Madison Va.
Richardson, Phyllis Minnie D.C.
A.B. 1950, Howard University
Richardson, Ralph Dan D.C.
Richter, Leonard D.C.
Rickey, Catherine Theresa Md.
Richey, Colson *LeRoy* Ariz.
Richey, Drake W.Va.
A.B. 1951, West Virginia University
Richey, Wayne Linwood Va.
Richman, Annie Cecil D.C.
Richman, Donald William Canada
Richman, Irwin N.Y.
Richmond, Alfred Wright Md.
Richmond, Richard Mountain W.Va.
B.S. 1951, Marietta College
Rick, Thomas Fred D.C.
Rickabaugh, John Mason Calif.
B.S. 1941, U.S. Naval Academy
Ricketts, Ada Pearl D.C.
B.S. 1948, Howard University
Ricketts, Jack Ware Tenn.
B.S. 1950, Tennessee Polytechnic Institute
Rickey, Stanton Michael Calif.
A.B. 1951, San Francisco State College
Ricks, Annie Va.
Riddle, James Pa.
Ridgely, Ruth Washington D.C.
B.S. 1953, Maryland State Teachers College
Ridge, Vincent William N.Y.
Ridge, Jeanette Shapiro Va.
A.B. 1952, Brooklyn College
Ridgely, Philip Alan Md.
Ridgeway, Patsy Sheppard D.C.
Ridgeway, Paul Wilson W.Va.
A.B. 1944, Shepherd State College
A.M. in Ed. 1949, West Virginia University
Ridley, Edward Lee Va.
B.S. 1952, St. Paul's Polytechnic Institute
Ridyard, Lorna Ann Ohio
Riecken, Richard Charles Va.
A.B. 1952, The George Washington University
Rieger, Augustine Va.
Rieger, Willard Roy Ohio
A.B. 1955, College of the City of New York
Riegert, Theophil Paul Pa.
B.S. 1949, U. S. Naval Academy
Rieger, Nora Nettie D.C.
Rees, Alma Pratt Ohio
A.B. 1930, Wilson Teachers College
A.M. 1944, The George Washington University
Riffle, Ella Evelyn Md.
Rigby, Maxwell Va.
Rigdon, Audrey Kathryn W.Va.
Riggins, Lee
B.S. 1950, College of William and Mary
Riggs, Thomas Samuel Ky.
A.B. 1951, West Virginia University Mich.
Rigsby, William Stewart
Rigterink, John Walter Md.
B.S. 1944, U. S. Naval Academy
Rimmel, Vesta Joan Neb.
Diploma in Law 1942, University of Tarta, Estonia
J.U.M. 1948, Dr. Rer. Pol. 1949, University of Mainz, Germany D.C.
Riley, Charles Edward Va.
Riley, Janice Krug Neb.
Riley, Patricia H. D.C.
Rice, Virginia Lee Va.
LL.B. 1942, National University D.C.
Rimerman, Brooke M.
Rinde, Howard Edwin
Rinden, Robert Watland
A.B. 1948, William Penn College
M.B.A. 1949, Harvard University Md.
Rinehart, Francis Lawrence
B.S. 1948, Wilson Teachers College D.C.
Rinnick, Wesley Joseph Ohio
Rinne, Oivo Michael
Rios, Irvin Glenn Ill.
A.B. 1954, University of Colorado
Rios, Manuel
Rios, Manuel Joseph D.C.
Risen, Paul Sydnor
B.S. 1950, Illinois State Normal University Md.
Rist, Lynne Michel D.C.
Riskin, Samuel
Ritchie, Elena V. Texas
B.S. 1951, Wilson Teachers College Ohio
Ritchie, Claudius Robert D.C.
Ritchie, Jack
Ritter, Colin
B.S. 1941, Wilson Teachers College D.C.
A.M. 1951, The George Washington University D.C.
Ritter, Katharyn Adair D.C.
Ritter, Mary Sandra
Ritz, Marie Magdalen

Rivara, George Leonard N.Y.
B.S. 1952, Syracuse University
Rivera, Ismael
Rivera Aponte, Gregorio Puerto Rico
B.S. 1950, M.S. 0951, University of Puerto Rico Puerto Rico
Rivera, Lucian
Rixse, Lucas Albert D.C.
Rizer, Max Devore Va.
A.B. 1951, University of Oklahoma Okla.
Roach, Elsie Wadsworth
Roach, Leroy Charles D.C.
B.S. 1941, Knoxville College D.C.
Roane, Melvin Chester
Robb, David Nelson Md.
Ph.D. 1948, University of Chicago Calif.
Robb, Earl James
Robbins, James Gill Pa.
Robbins, Arthur Dwane Va.
B.S. 1946, U.S. Naval Academy Md.
Robbins, Bessie Josephine
Robbins, David Tenn.
B.E.E. 1951, College of the City of New York N.Y.
Robbins, David
Robbins, David James Md.
Robbins, Fred Herah Md.
B.S. 1951, University of Pennsylvania N.Y.
Robbins, Spencer Everett
B.S. 1942, U.S. Naval Academy D.C.
Robbins, Talbot Edward, Jr.
Robbins, William Edgar D.C.
Roberts, Bess Hopkins D.C.
B.S. 1953, Valdosta State College Fla.
Roberts, Bobbie Lee
Roberts, Eugene Va.
B.C.E. 1941, College of the City of New York Md.
Roberts, Evan Dale
B.S. 1954, University of Illinois Va.
Roberts, Francis Xavier
B.S.E. 1945, The George Washington University Md.
Roberts, Gerald Grey
B.S. 1946, U.S. Naval Academy Ky.
Roberts, Gustavus Eugene
Roberts, Hezekiah Bradford D.C.
Roberts, Howard Richard Texas
B.S. 1955, The George Washington University N.Y.
Roberts, Howard Stowe
B.S. in M.E. 1945, Purdue University Va.
Roberts, Hugh Roy
Roberts, Jack Lael Wash.
B.S. 1951, Brigham Young University Va.
J.D. 1955, The George Washington University
Roberts, James Frederick
Roberts, James Pinckney Texas
A.M. 1950, College of Charleston S.C.
Roberts, Jesse Lee, University of South Carolina
B.S. [illegible] N.Y.
Roberts, John Summerfield D.C.
B.S. 1951, College of the City of New York
Roberts, John Summerfield
LL.B. 1951, University of Virginia
LL.M. 1955, The George Washington University
Roberts, John Williams, Jr.
Roberts, Joseph Harvey D.C.
A.B. 1954, Emory and Henry College Va.

Roberts, Kenneth Edward, Jr. N.Y.
Roberts, Lloyd Donald Va.
Roberts, Nancy Louise D.C.
Roberts, Richard Bernard D.C.
Roberts, Richard Ray D.C.
B.S. in L.S. 1948, A.B. 1949, Northeast Missouri State Teachers College
Roberts, Thomas David Calif.
B.S. 1924, U.S. Military Academy
Roberts, William Herman D.C.
Robertson, Charles Allred Va.
Robertson, David Justin N.Y.
A.B. 1934, The George Washington University
Robertson, Frank Lindsay Va.
B.S. in M.E. 1948, Michigan College of Mining and Technology
Robertson, Margie F Calif.
Robert, Clarence Cox, Jr. D.C.
Robert, Fred Andrew, Jr. Va.
Robichard, Marryann D.C.
Robinson, Arta Mae Md.
B.S. 1954, Morgan State College
Robinson, Calvin Coolidge Va.
Robinson, Charles Augustus Va.
B.E.E. 1949, University of Virginia
Robinson, Edmund Freeman Md.
A.B. 1951, Limestone College
Robinson, Elizabeth Winona D.C.
A.B. 1949, A.M. 1951, The George Washington University
Robinson, Ezra Pendleton
Robinson, Frank William D.C.
A.B. 1923, Emmanuel Missionary College Va.
Robinson, General Stonewall
A.B. 1951, The George Washington University D.C.
Robinson, George Michael
Robinson, George Sydney Va.
C.E. 1912, Rensselaer Polytechnic Institute N.Y.
Robinson, Harvey Graham
Robinson, Jeff P. Ill.
Robinson, John Wesley, Jr. Md.
Robinson, Kenneth Mosier Va.
Robinson, Lester James Jr. D.C.
Robinson, Merle Hugh D.C.
Robinson, Owen Everett Md.
Robinson, Fred Hess Md.
Robinson, Polin Arthur Lee N.D.
Robinson, Robert Edmund III Maine
Robinson, Roscoe Sumner D.C.
A.B. 1951, American University Mass.
Robinson, Rudi Stephenson
B.S. 1942, North Carolina State Teachers College Va.
Robinson, Sally Anne
A.B. 1949, A.M. 1951, Marshall College D.C.
Robinson, William Anthony
B.S. 1947, Mercer Teachers College D.C.
A.M. 1950, New York University
Robinson, Eugene Bernard
B.C.E. 1950, Catholic University of America Md.
Robinson, Rufus Douglas
B.S. 1954, Brigham Young University Idaho
Robbie, Thomas Bush
B.S. 1952, St. Bonaventure University Md.
M.S. 1955, Alabama State Teachers College
Robinson, Thurman, Jr.
Robley, Alice Maria D.C.
Roesterle, Jack Randolph D.C.
Okla.

Rochester, Robert Kendall Va.
Rockelli, Gerald Herbert, Sr. D.C.
Rockwell, Marion Arden Pa.
B.S. 1940, M. Intl. 1949, University of Pittsburgh
Rodack, Helen Pa.
Rodbell, Arthur Paul D.C.
Rodgers, David Arthur D.C.
Rodgers, Joseph Cook Md.
B.S. 1922, Illinois Institute of Technology
Rodgers, Orrin Joseph D.C.
Rodgers, Sanford Leland D.C.
A.B. 1948, Fresno State College
Rodier, John Paul Md.
A.B. 1952, Georgetown University
A.M. 1956, Harvard University
Rodriguez, Nicholas Melvin Va.
Rodriguez, Hortis S. Fla.
A.B. 1950, University of Florida
Roehr, Virginia D.C.
Roehrig, Daniel Frederick Md.
Roemer, Donald Von Md.
Roepe, Herbert Bruns, Jr. D.C.
A.B. 1948, The George Washington University
Roffman, Hyman Roth D.C.
Rogers, Edgar Pyrtle D.C.
Rogers, Fennell Wayne Fla.
Rogers, George Edmonston Va.
Rogers, Lincoln Carroll D.C.
A.B. 1950, Concordia College
Rogers, Lyndall James Ill.
Rogers, John Tenney Mo.
B.S. 1938, University of Colorado
Rogers, John Tyler D.C.
A.B. 1950, Wayne University
Rogers, Kenneth Newman, Jr. N.Y.
B.S. 1954, Ohio State University
Rogers, Mabel Ethel D.C.
A.B. 1927, Seattle College for Christian Workers
Rogers, Michael D.C.
B.S. 1948, Columbia University
Rogers, Thomas Gordon, Jr. Md.
A.B. 1950, Johns Hopkins University
Rogers, Robert Charles Texas
B.S. 1954, University of Maryland
Rohde, Lloyd Henry D.C.
A.B. 1948, A.M. 1952, University of Iowa
Rohrlich, Marguerite B. Md.
Roleff, Darrell Conway Md.
B.E.E. 1954, The George Washington University
Rolfing, Dorothy Margaret D.C.
Rolfing, Waldemar Marguerite D.C.
Rolnbaugh, John Charles Ohio
LL.B. 1948, University of Michigan
Rolston, Gertrude W. D.C.
Romanowsky, Vera Thailand
Romano, Robert Francis Pa.
Romesberg, Howard Lee Mass.
A.B. 1953, Swarthmore College
Rooflan, Lillian Chew Md.
Rooflan, Richard Valentine D.C.
B.S. in E.E. 1949, University of Pittsburgh
Roofnian, John Francis Md.
B.S. 1952, University of Miami
Rooflan, Arlene E. W.Va.
B.S. 1953, Concord College
Rooflan, Joseph H. Ky.
Roop, John Fletcher III D.C.

Roman, Manuel N.Y.
A.B. 1954, New York University
Roman, William Edward Md.
B.S. 1952, Miami University
Romanus, Nina Nichols D.C.
A.B. 1945, University of Michigan
Romanski, Shirley Gaines Va.
Romero, Carmen Lazell Va.
Romero, Joseph Paul
A.B. 1950, The George Washington University
Romey, Morton V.
B.E.E. 1943, Clarkson College of Technology
Rood, George Fla.
A.B. 1942, University of Florida
LL.B. 1948, The George Washington University
Roof, Michael Kitching Md.
Roos, Alice Marie D.C.
Roosevelt, John Joseph D.C.
Root, Marcella Va.
B.S. 1950, Michigan State College
Root, Eugene Monroe Va.
Root, Hattie Mae D.C.
Root, Melvin Irvine N.Y.
A.B. 1942, University of Sao Paulo, Brazil
Rosania, Joseph Anthony Md.
Rose, Alexander Grant D.C.
A.B. 1934, A.M. 1936, Wayne University
Rose, Rae Va.
Rose, Rita D.C.
Rosen, Elaine Jean N.Y.
Rosen, Gerry Meresman D.C.
A.B. 1944, Cornell University
Rosen, Herbert Harry D.C.
B.S. 1954, The George Washington University
Rosen, Marvin H. D.C.
B.S. 1951, Kansas State Teachers College
Rosen, Richard Howard N.Y.
B.C.E. 1948, Cornell University
Rosen, Sam D.C.
B.S. 1950, The George Washington University
Rosenberg, Emma May D.C.
Rosenberg, Hyman Louis D.C.
Rosenberg, Irwin Jack Va.
Rosenberg, Rosa Rona
Rosenberger, Mary Jane
A.B. 1950, The George Washington University
Rosenberry, William Ward Md.
B.S. in E.E. 1947, Bucknell University
Rosenblum, Harry Myer N.Y.
B.S. 1948, M.S. 1951, The George Washington University
Rosenfeld, Chris Prouty Va.
A.B. 1941, Antioch College
Rosenfeld, Thomas Harris R.I.
A.B. 1951, Lawrence College
Rosenfeld, Johanna Clae Md.
Rosenman, Louis N.Y.
A.B. 1948, Brooklyn College
A.M. 1949, New York University
Rosensky, Martin Bernard D.C.
Rosenthal, Elaine P. Md.
Rosenthal, Marilyn D.C.
Rosenthal, Robert J. N.Y.
A.B. 1937, University of North Carolina
A.M. 1947, American University

Roshwalb, Erling Francis
B.C.E. 1950, New York University — Va.
Rosier, Arthur Steven
Ross, Amanda Virginia — D.C.
B.S. 1950, Maryland State Teachers College — D.C.
Ross, Audrey May
Ross, Bruce Kenneth — Calif.
B.S. 1952, University of Montana — Mont.
Ross, Clifton Bruce
Ross, Dorothy Lewis — N.C.
Ross, Dorothy Alexander — D.C.
Ross, Frances Jane — Va.
Ross, Frederick Lane — D.C.
Ross, Harry Fleming — Va.
Ross, Lawrence Bernard — Md.
Ross, Leah Edith — Md.
Ross, Lois — Mass.
B.M.E. 1928, Northeastern University; LL.B. 1932, The George Washington University — D.C.
Ross, Marjorie
B.S. 1951, Utah State Agricultural College — Md.
Ross, Marjorie Elizabeth
B.M.E. 1948, Howard University; A.M. 1951, Columbia University — D.C.
Ross, Marjorie Russell
A.B. 1950, University of Connecticut; M.S. 1952, University of Maryland — Md.
Ross, Robert Russell
B.S. in E.E. 1950, Oklahoma Agricultural and Mechanical College — Va.
Ross, Robert Samuel — Okla.
A.B. 1950, Morningside College; B.S. 1951, Nebraska State Teachers College — D.C.
Ross, Robert Wilfrid
Ross, Virginia Rose — Texas
A.B. 1950, Hollins College; M.A. 1951, Texas State College for Women — Miss.
Rossano, Lucy Mary
Rossano, Thomas Gahan — D.C.
Rossano, William Blackmore — Kans.
B.S. in A.E. 1952, Lafayette College — Va.
Rossbach, Anne Marie
A.B. 1950, The George Washington University; A.M. 1954, The George Washington University — D.C.
Rossbach, Lucy Lee
B.S. 1950, Louisiana State University — Md.
Rossbach, Rosalie Mackenzie — D.C.
Rossbach, Ruth Ann — Va.
A.B. 1951, B.S. in L.S. 1954, The George Washington University
Rossbach, Herbert
Rossbach, Paul Maloney, Jr. — D.C.
Rossbach, Phyllis Jane — Va.
LL.B. 1954, The George Washington University — D.C.
Rossbach, Reginald Bernard
Rossbach, Arnold A. — Va.
A.B. 1949, Washington and Lee University; M.S. 1951, Columbia University — N.Y.
Rossbach, Arnold Bernard
A.B. 1952, The George Washington University
Rossbach, Robert
B.S. 1950, Massachusetts Institute of Technology — Ohio
Rossbach, Robert Maloney, Jr. — D.C.
Rossbach, Ruth Marjorie — Va.
LL.B. 1954, The George Washington University — D.C.
Rossbach, Arnold A.
A.B. 1949, Washington and Lee University; M.S. 1951, Columbia University — N.Y.
Rossbach, Arnold Bernard
A.B. 1952, The George Washington University
Rossbach, Robert
B.S. 1950, Massachusetts Institute of Technology — Ohio
Rossbach, Robert Maloney, Jr. — D.C.
Rossbach, Ruth Marjorie — Va.
LL.B. 1954, The George Washington University — D.C.
Rossbach, Arnold A.
A.B. 1949, Washington and Lee University; M.S. 1951, Columbia University — N.Y.
Rossbach, Arnold Bernard
A.B. 1952, The George Washington University
Rossbach, Robert
B.S. 1950, Massachusetts Institute of Technology — Ohio

Rothwell, Gideon Franklin — Mo.
B.S. & M.E. 1949, University of Missouri
Rotnofsky, Lenny Samuel — Va.
B.S. in E.E. 1951, University of Michigan
Rotz, A. James Leonard — W.Va.
Roudabush, Marion Malone — Va.
Rountree, John Kenneth — Md.
Rourke, Thomas Grier — Md.
A.B. 1949, Gettysburg College
M.S. 1951, Pennsylvania State University
Rouse, Mildred Bishop — Md.
A.B. 1950, A.M. 1954, The George Washington University
Rouse, Allen Stanley — D.C.
Rouse, Genevieve Diedrick — Md.
Rouse, Hudson Eugene — Va.
E.E. 1954, Michigan State College
Rouse, James W. Jones — S.C.
A.B. 1949, Vanderbilt University
Rouse, Mary Caroline — Md.
Rousos, Deborah Howard — Va.
Rousseau, Palmyra — Vt.
A.B. 1949, University of Utah
Rousseau, Stanley Lee — Va.
Roussel, Elsie Lois — D.C.
Roussos, Robert Sinclair — Va.
B.S. 1952, The George Washington University
Rovere, Eugene Henry, Jr.
B.S. 1950, Yale University
Rowan, Jewell — D.C.
Rowan, Robert Gilbert — Pa.
Rowan, Anita Grace — N.J.
Rowe, Gregory Vallon — Va.
Rowe, Gerald — D.C.
B.S. 1951, Bridgeport College
Rowe, Phyllis Tyree — D.C.
Rowe, Richard Arthur — N.Y.
Rowe, Arnold Irvin — D.C.
A.B. 1952, University of Maryland
Rowe, Tim — Va.
A.B. 1950, Hardin-Simmons University
Rowe, Stanley Irvin — N.Y.
Rowe, George B. — D.C.
Rowe, Robert Pearse — Va.
Rowell, Nan — W.Va.
Rowland, Nancy Lee — Va.
Rowland, Robert Elwood — Md.
Rowland, Mary Elizabeth — Va.
Rowland, Gerald Ray — Idaho
Rowland, Gilbert Allen, Jr. — Va.
Rowland, Marcia Jane — Mass.
Rowland, Dana Edwin — Va.
Rowland, Hedda — Va.
A.B. 1949, The George Washington University
Rowley, Christine Marian
Rowsey, Robert Paul — D.C.
Rowsey, Samuel — Md.
B.S. in Phar. 1952, The George Washington University — D.C.
Roxanis, Timothy
Roxby, Lesley Eugene — D.C.
A.B. 1950, The George Washington University — Md.
Roxworthy, Gregory Lewis
Royer, Alice A. — Va.
Royster, Caroline Kennard
Royster, Douglas Williams — Calif.
B.C.E. 1950, The George Washington University — D.C.

Ruffner, Paul Monroe — Calif.
Rugaas, Frances Nessle — N.Y.
Rugaas, Peter Robert — D.C.
A.B. 1951, New York University
A.M. 1955, Columbia University
Ruhl, Robert Fulton — Iowa
Rule, Elsie M. — D.C.
Rule, Robin Louise — Va.
Rumbaugh, Clark Edgar — Va.
Rumberger, Joseph Paul — Md.
A.B. 1948, A.M. 1947, University of Pennsylvania
Rumke, Richard William — Va.
Rung, Edward Eugene, Jr. — Conn.
Runge, Denise — Va.
Runion, Martha Louise — D.C.
Runnoe, Ellen Mae — Utah
Runtz, Edward Gerald — Va.
A.B. 1956, Ohio University
A.M. 1957, Syracuse University
Runtz, Herman John — Wis.
B.S. 1931, University of Wisconsin
Ruppelt, Ellis Arthur — Va.
A.B. 1951, University of Florida
Ruppert, Eleanor Petlansky — Va.
Ruppert, John — D.C.
Ruppert, Thomas Otto, Jr. — Va.
Rusk, Elaine Plummer — D.C.
Rusk, Jane Diebold — D.C.
Rusk, Robert Hemrich — Md.
Russak, Paul Vincent — N.J.
Russell, Robert Lee — Kans.
A.B. 1951, University of Nebraska
Russell, James Miller — D.C.
A.B. 1950, The George Washington University
Russell, John Alan — Va.
Russell, John Bruce — Md.
A.B. 1954, The George Washington University
Russell, Stanton Best — D.C.
B.M.E. 1942, The George Washington University
Russell, Warren Beal — Md.
Russell, William Augustine, Jr. — Va.
Russell, William Linn — Ga.
Russell, William Manning — D.C.
Russell, Wylie Hayden — Va.
A.B. 1944, Ed.M. 1948, Oklahoma City University
A.M. in Ed. 1951, The George Washington University
Rust, James Henry, Jr. — Pa.
B.S. 1954, Franklin and Marshall College
Rust, Lloyd Armen Gano — R.I.
A.B. 1951, Providence College
Rutledge, Robert Clinton — Va.
A.B. 1948, University of Virginia
Rutter, Edward Steven — N.J.
Rutz, Marilyn Lee — D.C.
A.B. 1961, Bennington College
Ryan, Edward Byrne — Va.
A.B. 1954, The George Washington University
Ryan, John Francis — Va.
A.B. 1946, LL.B. 1954, Boston College
Ryan, John Michael — Pa.
B.S. 1955, LaSalle College
Ryan, John Powell — Md.
Ryan, Joseph Patrick, Jr. — D.C.
Ryan, Mary Dolores — Md.
A.B. 1947, LL.B. 1949, The George Washington University
Ryan, Michael Otto — Pa.
Ryan, Philip Michael, Jr. — D.C.
Ryan, Rita Marie — N.Y.
Ryan, Robert Edwin — Va.
Ryder, Mary Jane — D.C.
Ryder, Robert Burton — Conn.
A.B. 1952, The George Washington University
Rydholm, William Norman — Va.
A.B. 1951, The George Washington University
Rydkowski, Stanley Joseph — D.C.
A.B. 1958, Michigan State Normal College
Ryerson, Francis J. — D.C.
Ryerson, William Robert — N.J.
Ryklun, Douglas Joseph — Md.
A.B. 1951, The George Washington University
Rymer, Kenneth Warren — D.C.
Rymer, Thomas Armistead — Md.
B.C.E. 1949, Cornell University
Ryneska, Richmond Gilbert — D.C.
B.E.E. 1953, Pratt Institute
Rynerson, Wendell Price — Ind.
A.B. 1926, Dickinson University
LL.B. 1929, Indiana University
LL.M. 1947, The George Washington University
Ryner, Edward Joseph — D.C.
B.S. 1962, Penn State University
Rynerson, Edward Carl — Pa.
Rynerson, Robert Henry — Pa.
B.S. 1962, University of Rochester
M.S. 1964, Indiana University

S

Saad, John William — Pa.
Saadi, Nabil Nasib — Md.
Saba, Fauzi Fund — Lebanon
B.B.A. 1958, American University of Beirut
M.B.A. 1964, Northeastern University — D.C.
Saba, Vladimir Vratislav — D.C.
Sabatini, Louis John — Mich.
Sabatino, Eugene Orlando — Pa.
B.S. 1941, Cornell University — D.C.
A.M. 1947, Columbia University — Pa.
Sabato, Paula — Md.
Sabin, Sandra Lee — D.C.
Sabine, William Cooper — D.C.
B.S. 1951, University of Maryland — D.C.
Sabino, Edward Ross II — Va.
Sabitino, Edward Michael — Md.
Sachs, Kenneth Paul — Va.
Sachs, Robert Neal — D.C.
Sachs, Theodore — D.C.
A.B. 1934, Brooklyn College — D.C.
A.M. 1937, Columbia University — D.C.
Sachs, Theodore Leon — Colo.
Sachs, Mohamed Sabry Mohamed — D.C.
Sadler, Frederick F. — Md.
B.S. 1944, California Institute of Technology — Md.
Sadler, Lloyd Elwyn — Va.
Sadler, Helen C. — D.C.
Sadler, John Franklin — D.C.

Safrit, Helen Howard D.C.
B.S. 1942, Cheyney State Teachers College
A.M. 1949, Howard University
Sage, Rose Marie
Sager, Gustav Gustav Pa.
Sager, Irving D.C.
B.B.A. 1956, College of the City of New York D.C.
Sager, Oscar Simon
A.B. 1940, New York University Conn.
Sahagian, Ara Basil
St. Clair, Robert Gordon Calif.
B.S. 1954, The George Washington University Va.
St. Claire, Mary Davenport
St. Jeor, Ethel Hansen D.C.
St. Leger, James Joseph Va.
B.S. 1956, Pennsylvania State Teachers College, East Stroudsburg Md.
Saiz, Antonio
Salaverry, Edward Panama
Salesmen, Harold Kazuto Pa.
A.B. 1955, The George Washington University Hawaii
Salazar, Yolanda
Salb, Frank Joseph, Jr. D.C.
B.S. in B.A. 1956, University of Nevada Nev.
Salcido, Leonard Fayette
Salcido, Lorenzo R. Pa.
Salcido, Irving Libya
Salcido, Jeanne B D.C.
Salcido, Robert Joseph D.C.
Salcido, Saad Ibrahim D.C.
Certificate 1943, General Staff College Egypt D.C.
Salcido, Donald Jack
B.S. 1955, Wilson Teachers College D.C.
Salcido, Lloyd Lawton
B.S. 1951, Pennsylvania College R.I.
Salcido, Gustav Adolph
A.B. 1950, A.M. 1951, The George Washington University D.C.
Salcido, Saad Youssef
Salcido, Bassim Vincent Iraq
B.S. 1950, Georgia Institute of Technology Pa.
Salcido, Arthur
Salcido, Lloyd Mario D.C.
Salcido, Patricia Marie D.C.
A.B. 1954, The George Washington University D.C.
Salcido, Donald Ward
B.S. 1948, A.M. 1949, Harvard University Va.
Salcido, Richard Anthony
B.S. 1951, Siena College N.Y.
A.M. 1953, Boston University
Salcido, Karl Irving
B.S. 1952, Cornell University N.Y.
Salcido, Leon Irving
Salcido, Joseph
Salcido, Abraham Kaufher Va.
Salcido, Mildred Johnson Md.
A.B. 1933, Howard University D.C.
A.M. 1948, University of California at Los Angeles Va.
Salcido, Charles Ernest
Salcido, Thomas Eugene
Salcido, Robert Barnes D.C.
Salcido, Walter Ellsworth D.C.
B.S. 1954, Johns Hopkins University D.C.
Salcido, Chester Page Va.

Samuel, Helen Ethel Va.
A.B. 1923, Swarthmore College
A.M. 1934, The George Washington University
Samuel, Lila D.C.
B.S. 1935, University of Maryland
Samuelson, Esther Marie Va.
A.B. 1956, University of North Carolina
Samuelson, Joseph O. Y. Utah
Samuelson, Frederick Stanley Md.
B.S. 1951, Southern Missionary College
Sanchez, Joseph E. D.C.
Sanchez, Leone Victor N.M.
A.B. 1954, New Mexico Highlands University
Sanchez, Lawrence Mae Va.
Sanchez, Rosa Jane Mass.
Sanchez, Charles Edward Va.
A.B. 1952, The George Washington University
Sanchez, Sidney D.C.
A.B. 1951, Louisiana State University
Sanchez, Carl Andrew Va.
B.S. 1946, U.S. Naval Academy
Sandbeck, Elmer Wilmer D.C.
Sandbeck, James Tyler, Sr. Ark.
Sandberg, Joseph Theodore Ill.
Sandberg, Mary Henderson Fla.
A.B. 1928, Boston University
Sanderlin, Raydonna D.C.
A.B. 1957, A.M. 1961, The George Washington University
Sanders, Roger Edward Ind.
A.B. 1941, Indiana University
Sanders, Walter Hale Va.
B.S. in C.E. 1950, Louisiana Polytechnic Institute
Sanderson, Aurey Ivabel Gomez D.C.
Sandoval, Oliver Silva D.C.
Sandoval, Ramona S. D.C.
B.S. 1944, Wilson Teachers College
Sandifer, Robert Morton D.C.
Sandifer, Harry Allen Calif.
Sandmeyer, Felipe Chile
Sandoval, Adelina Indiana
Sandoval, Jeanne Mankey D.C.
A.B. 1940, Florida State University
Sandoval, Howard D.C.
Sandsky, Elizabeth Florence Maine
Sansom, Carlos Edgar Nicaragua
A.B. 1933, The George Washington University
Santana, Augusto Duarte D.C.
Santandreu, Saverio D.C.
Santerre, Phyllis Kershaw D.C.
Santiago, Frank Lugo N.Y.
Sargent, Florence Anner Md.
B.S. in Ed. 1942, Boston University
Sarnoff, Chesterfield Fabricius Va.
Sarnoff, William Terrelong D.C.
Sarnoff, William Schofield Md.
A.B. 1910, Amherst College
A.M. 1913, Brown University
Satorsky, Louis Nathan D.C.
A.B. 1940, Harvard University
B.S. in Ed. 1948, Nebraska State Teachers College
LL.B. 1947, Northeastern University
Sattler, Arvid Andrew Wis.
A.B. 1954, University of Minnesota

Sayer, Eugene Edwin — D.C.
Scarborough, Lukka Dimaris — D.C.
Saul, Howell Jay — N.Y.
A.B. 1788, The George Washington University
Saul, Richard C. — D.C.
Saunders, James Franklin, Jr. — D.C.
Saunders, Lessie Jessamine — D.C.
Saunders, William Wright — Md.
A.B. 1925, University of California
Savage, John, Jr. — Pa.
Savitar, George — Md.
Savoie, Arthur Paul — D.C.
Savoie, John William — D.C.
Sawtelle, Julius — Va.
Sawtelle, Gregory Seney — Calif.
Sawyer, Rodney Powell, Jr. — D.C.
B.S. 1932, Miller Teachers College
A.M. 1948, New York University
Sawyer, Lena Ford — Wash.
A.B. 1917, Municipal University of Wichita
Sawyer, Samuel — Pa.
A.B. 1902, Wilkes College
Sawyer, Norman Marshall — D.C.
B.S. 1943, U. S. Coast Guard Academy
Sax, Edward — D.C.
A.B. 1932, Wayne University
Sax, Frieda Bertha — Md.
Saxton, George Edward — Md.
Saylor, Robert Lewis — D.C.
Sayler, Harold Clay — Md.
B.S. 1940, University of Maryland
Scalera, Ronald Dennis — D.C.
Scallan, Warren Allan — Md.
Scarr, Robert Malone — Va.
A.B. 1929, Willamette University
Scarpa, William Conner — Md.
Scelba, Clement Sharde — Md.
Schaefer, Mary Allen — D.C.
Schaeffer, Stephen Mary — Ohio
Schaffer, Alice Veronique — D.C.
B.S. 1933, New Jersey State Teachers College
B.S.M. 1940, Drake University
Schaffer, Joseph James — Md.
M.E. 1941, Stevens Institute of Technology
Schaffer, Marian — N.Y.
Schaffer, Edward Charles — D.C.
Schaffer, Louis Gustave — D.C.
Schaffer, George Thomas — Wis.
Schaffer, Irene Rose — Va.
A.B. 1929, Kings College
M.S. in Ed. 1934, Alfred University
Schaffer, Dan Schuyler — Md.
A.B. 1934, Hamline College
M.S. 1937, Ohio State University
Schaffner, Jeffrey Jule — Md.
B.S. 1933, University of California
Schaap, Joseph — Md.
A.B. 1934, University of Maryland
Schachtel, Sandra Ann — Ind.
Schaefer, Evelyn Dorinda — N.J.
A.B. 1932, Vassar College
M.P.A. 1944, Syracuse University
Schaefer, Irene Claudia — Pa.
M.S. 1934, University of Pittsburgh
Schaefer, Kathleen Marie — Ill.
B.S. 1943, University of Illinois
Schaefer, Charles Edmondson — Va.

Schachter, Israel — D.C.
A.B. 1918, The George Washington University
Schachtel, Eleanora Ann — Mass.
Schaefer, Jerome Joseph — Pa.
A.B. 1941, Catawba College
Schaefer, Alexandra Marion — N.Y.
Schaffenaar, Marianne Leeds — Va.
Schaffer, Lois Pearl — Pa.
A.B. 1945, Gettysburg University
Schaffstein, Walter Rolland — D.C.
Schaible, Jane Lawrence — Va.
Schantz, Beryl Lloyd — Iowa
Schatz, Lillian Sophia — Pa.
A.B. 1940, University of Maryland
Schauer, Edward Christopher — D.C.
B.S. 1923, Haverford College
Schauer, Hazel — Fla.
Schenck, Irvin Henry — Wis.
Schenck, Ella Ellis — Md.
B.S. in Ch.E. 1920, M.S. in Ch.E. 1922, University of Wisconsin
Scherer, Elmer James, Jr. — Md.
Schiffman, Harvey Richard — Md.
Schiffman, Mary M. — Md.
Schiffler, Jacqueline Bonet — Md.
Schiffler, Raymond Claude — Md.
Schilling, Hayden William — Md.
Schilling, Lee Basil — Pa.
B.S. in F.S. 1939, Georgetown University
Schilling, Robert Gilbert — Pa.
B.S. in E.E. 1934, Lehigh University
Schiller, Christian Frank — D.C.
Schlichter, Eugene Wheeler — Va.
Schlosser, Gerald George — Md.
Schlueter, Vivian L. — Md.
Schmeisser, Roy Raymond, Jr. — Md.
B.E.E. 1936, The George Washington University
Schmidt, Lawrence Irwin — Mass.
B.S. 1943, A.M. 1948, Ph.D. 1951, Boston University
Schmidt, Marvin Eugene — N.C.
B.S. in M.E. 1940, University of Pittsburgh
Schmoyer, Evelyn Regina — Pa.
Schnabel, Lester Wesley, Jr. — Va.
Schneeweiss, Mary Ann — Md.
Schneider, Bessie Marie — D.C.
Schneider, Armand Christian — N.Y.
Schneider, Arthur Walter — N.Y.
B.S. 1943, Webb Institute of Naval Architecture
Schneider, Catherine Marie — Mass.
Schneider, Dorothy Augusta — Pa.
Schneider, Frank Hall — Va.
B.S. 1929, Wilson Teachers College — D.C.
Schneider, Lee Lorraine — D.C.
Schneider, Nancy Elizabeth — Md.
Schneider, Raymond Freeman — Md.
B.P.E. 1942, The George Washington University
Schneider, Robert Milton — N.Y.
B.B.A. 1948, M.B.A. 1949, B. 1950, University of Michigan
Schneider, Russell Allen — Md.
Schneider, Virginia Rose — Va.
Schnitzer, Frederick Joseph — Va.
A.B. 1932, Gettysburg College
Schnitzer, Clarence Wilbur — Va.
B.S. 1948, Kansas State College

Schnaz, Ethel Mary
Schnebly, Harold Lewis D.C.
B.S. 1949, Iowa State University D.C.
Schneider, Robert Leonard
B.S. 1950, University of Maryland S.D.
Schneider, Dwight Lincoln
Schnitzer, George Albert Va.
Schnitzer, Nancy Kay Va.
Schnitzler, Harold Sidney Texas
Schnuer, James Philip D.C.
Schnuer, Malcolm D.C.
Schnuer, Nancy Jane Md.
Schnuer, Willard Nutter D.C.
Schnur, Lisa M. Va.
A.B. 1952, Randolph-Macon Woman's College Md.
Schnyer, Morgan Mosher
B.S. 1950, The George Washington University N.C.
Schock, George William
Schoeberl, Irwin Ivan D.C.
A.B. 1950, University of Alabama N.Y.
Schoen, Victor
A.B. 1950, New York University D.C.
M.A. 1951, Hunter College
Ph.D. 1955, California Institute of Technology
Schoen, Rodney Sinclair
A.B. 1950, The George Washington University Va.
Schoener, Gustave Roland
A.B. 1950, Stanford University Calif.
Schoenfeld, Robert Lewis
A.B. 1950, The George Washington University D.C.
Va.
Schoenfeld, Rodney Lewis
M.B.A. 1955, Rutgers University
Schoenfeld, Stanley Lewis
B.S. 1950, Western Maryland Teachers College D.C.
Schoenfeld, Robert Acton
Schoenfeld, Arthur Ivan D.C.
A.B. 1950, Columbia University N.Y.
Schoenfeld, Gerald Murray Calif.
Schoenfeld, Lewis Ross
Schoenfeld, Rose Gertrude Ann D.C.
Schoenfeld, Virginia Evelyn Wis.
Schoenfeld, Lewis A. Md.
A.B. 1950, University of Minnesota D.C.
Schoenfeld, Lewis Hall
A.B. 1950, The George Washington University D.C.
Schoenfeld, Lawrence Joseph
Schoenfeld, Mary Catherine Pa.
Schoenfeld, Morris Elias
Schoenfeld, Robert Allen Va.
Schoenfeld, Sidney Lee Va.
Schoenfeld, William Wilson Pa.
Schoenfeld, Frederick Allen D.C.
Schoenfeld, Robert Allen Va.
Schoenfeld, Stanley Douglas Lewis Md.
Schoenfeld, Thomas Wilbert D.C.
Schoenfeld, Wilbert Va.
Schoenfeld, William Md.
Schoenfeld, Lewis Va.
Schoenfeld, Morris Md.
Schoenfeld, Stanley Va.
Schoenfeld, Thomas Md.
Schoenfeld, William D.C.
A.B. 1950, The George Washington University
Schoenfeld, William
A.B. 1950, University of North Carolina N.C.

Schoffeleers, Mathew Luther Md.
Schoffstall, Jesse Joseph Va.
Schoffstall, Rogers E. Mass.
B.S., A.B. 1949, American International College
Scholey, William Charles D.C.
B.S. 1948, University of Wisconsin
Schoneman, Norma G. Md.
Schoneman, Kenneth Earl D.C.
Schoof, Preston Nathan Pa.
A.B. 1951, Pennsylvania State University
Schoon, Jack Joseph D.C.
A.B. 1948, The George Washington University
Schoonhoven, Gerard D.C.
A.B. 1949, University of Chicago
A.B. 1951, Stanford University
Schoonover, Anthony John, Jr. Pa.
Schoonover, Anthony John N.Y.
Schoonover, Barbara D.C.
Schoonover, Barbara D.C.
B.S. 1950, Lafayette College
M.S. 1954, Columbia University
Schoonover, Caroline Robinson D.C.
Schoonover, Marlene Md.
Schoonover, Milton Allan N.Y.
B.S. 1951, College of the City of New York
Schoonover, Phyllis N.Y.
A.B. 1950, The George Washington University
Schoonover, Richard Alexander D.C.
Schoonover, Marcia Md.
Schoonover, Mildred Norton N.Y.
Schoonover, Richard Donald Mass.
Schoonover, Douglas Marion D.C.
A.B. 1950, Lake Forest College
Schoonover, Morgan Gaines Va.
A.B. 1950, Tufts College
Schoonover, Ruth McCluskey D.C.
A.B. 1950, The George Washington University
Schoo, Adrianna Ann Va.
Schoo, Shanna Jane D.C.
B.S. 1950, Minnesota State Teachers College, Winona
Schoo, Bruce Milton Va.
Schoo, Cathy Lorraine Va.
B.F.A. 1951, University of Minnesota
A.M. 1953, College of Education
Schoo, D. C. Peter Hungary
Schoo, Edward Glenn D.C.
B.S. 1954, Wilson Teachers College
Schoo, Evelyn Olive D.C.
A.B. 1950, Northwestern State College of Louisiana
Schoo, Nan Eugene
Schoo, Rose Marie Va.
Schoo, Russell Lee Wash.
Schoo, Sylvester John D.C.
A.B. 1950, Howard University D.C.
Schoo, Raymond Wagner
Schoo, Lieutenant Taylor D.C.
B.S. 1949, Maryland University Md.
Schoo, Anna Gabriel
A.B. 1950, Temple University D.C.
Schoo, Mary Elizabeth
Schoo, Maryland Griffin N.J.
A.B. 1950, The George Washington University D.C.
Schoo, Richard Edward
Schoo, Richard Edward D.C.
A.B. 1950, Georgetown College

Scott, Robert Mitchell — Va.
B.E.E. 1941, Brooklyn Polytechnic Institute
Scott, Robert Thomas — D.C.
A.B. 1955, Georgetown University
Scott, Sarah Low — D.C.
Scott, Theresa Clarke — N.Y.
A.B. 1942, Barnard College
LL.B. 1945, Columbia University
Scott, William Griffith — Va.
B.S. 1952, University of Missouri
Scott, William Henry — Calif.
Scruggs, Wilma Joyce — W.Va.
Scruggs, Margie Ann — Va.
A.B. 1944, Georgia State College for Women
Scrivener, Nina — Va.
Scudder, Eleanor Earl — D.C.
Scully, Mildred Coughlin — D.C.
Scurlock, Herbert Smith — D.C.
A.B. 1946, Howard University
Seal, Morgan Swain — Va.
B.S. 1949, M.S. 1951, The George Washington University
Seaman, David Valentine — D.C.
A.B. 1949, LL.B. 1952, Syracuse University
Searell, Cecile Flanke — Md.
Search, Harry Edwin — Md.
Sears, Jere William — Md.
A.B. 1950, Harvard University
Sears, Robert Winfield — N.Y.
B.S. 1941, Indiana State College
Sexton, Robert Wagenmaker — D.C.
A.B. 1952, Washburn University
Sexton, Sonia Fay — Md.
Seybold, Donald Henry — N.Y.
Seymour, Earlene Joy — Kans.
Seymour, Ralph Nelson — Pa.
Seyk, Gordon Florence — Calif.
B.S. 1951, University of California
Seykmyer, Charles Robert, Jr — Md.
Seymour, Nell Elizabeth — D.C.
B.S. 1949, University of Minnesota
Shadley, Harry F. — Va.
Shadwick, Gail Franklin — Va.
B.B.A. 1955, Washburn University
Shadoff, Katherine Knowlton — Va.
A.B. 1945, Cornell College
Shadrick, Henry Paul — N.Y.
B.S. 1951, Georgetown University
Shadrick, Robert Dean — D.C.
B.S. 1954, The George Washington University
Shafer, Clarence David — Okla.
Shaffer, Edna Gertrude — Va.
A.B. 1944, University of Wisconsin
Shaffer, Emory Howard — Md.
A.B., A.M. 1951, Johns Hopkins University
Shaffner, Barbara Jane — Tenn.
Shaffer, Muriel Clarke — D.C.
A.B. 1941, Bennington College
Shaft, Joan Elizabeth — D.C.
Shaft, Phillip Lamey — D.C.
Shafter, Anthony Michael — N.J.
Shafer, LeRoy Alton — D.C.
B.S. 1951, Eastern University
Segal, Bernard Robert
B.S. 1948, The George Washington University — D.C.

Segal, Bruce Zoffin — D.C.
A.B. 1954, The George Washington University
Segal, Judith — D.C.
Segal, Judith Anne — D.C.
Segal, Paul Freed — N.Y.
Segal, Seymour Marvin
A.B. 1940, Long Island University
A.M. 1940, University of Pennsylvania
Segnari, T. James — D.C.
Segreda, Guillermo — D.C.
Licenciado in Letters and Philosophy 1952, University of Costa Rica
Sehner, Donald Francis — N.Y.
Seidel, Claudene — D.C.
A.B. 1953, Vassar College
Seidel, John Jacob, Jr. — Va.
A.B. 1947, Princeton University
Seidman, Milton — Va.
B.S. 1938, Johns Hopkins University
M.S. 1949, The George Washington University
Seiler, William Wilkins — D.C.
Seitz, John Clarence — Va.
B.S. 1955, Franklin and Marshall College
Sekela, Walter Harry — N.J.
A.B. 1951, Rutgers University
LL.B. 1954, Boston University
Selby, Paul Francis — Ohio
Self, Bill Terrell — N.C.
Selgman, Stanley Louis — Md.
B.S. 1955, University of Maryland
Sell, Glenn William — D.C.
Sellers, Raphael George — Va.
Senser, Charlene Esther — Va.
A.B. 1955, The George Washington University
Sennett, William Frederick — D.C.
A.B. 1951, Temple University
Sensenman, Edward, Jr. — Va.
A.B. 1953, The George Washington University
Semons, Joan Frances — Md.
Sencer, Henry Joseph — Va.
A.B. 1950, American International College
Sendejo, Serapio L. — Texas
A.B. 1953, The George Washington University
Senet, Diana — D.C.
Senger, Florence Amelia Corwin — Va.
A.B. 1944, Bryn Mawr College
Sengstack, Charles Henry III — D.C.
Sengstack, George Fleming — Pa.
B.S. 1942, The George Washington University
Sennewald, Karl Frederick — D.C.
Sensi, John Eugene — D.C.
B.S. 1949, Carnegie Institute of Technology
Separovich, Remin — D.C.
Sepulveda, Inez Almarza — D.C.
Serber, Edna Jean — M.
Serber, Michael
Serber, Paul Reynolds
B.S. 1953, Georgetown University — D.C.
Serbet, Alfons Paul
Magister Juris 1947, University of Bucharest — D.C.
Serot, Naomi Maxine

Servando, Cesar Concha — Philippines
LL.B. 1954, University of the Philippines

Servey, Thomas Eugene — Va.
B.S. 1951, Mount Union College

Sestak, Joseph Ambrose — Pa.
B.S. 1942, U.S. Naval Academy
M.E. 1949, Massachusetts Institute of Technology
M.B.A. 1954, The George Washington University

Seth, John Maynard — Oreg.
A.B. 1950, Pacific University
LL.B. 1952, North West College of Law

Seward, Clarence, Rd — Md.

Sewell, Homer Belt, Jr. — N.C.
B.S. 1945, U.S. Naval Academy

Sewell, Norman Lewis — W.Va.
A.B. 1953, Morris Harvey College

Sexmer, Saul — Mont.

Seymour, Sandra Angela Eve — D.C.

Shafer, Gilbert Ross — Ky.

Shafer, Neil Lamar — Pa.

Shaffner, Frances Nadine — D.C.

Shaffner, Hugh Madison, Jr. — Va.
A.B. 1951, University of Maryland
J.D. 1955, The George Washington University

Shaffer, Charles Bernard

Shaffer, Margaret Rae — Md.

Shaffer, Mary Lo — D.C.

Shaffer, Robert Gilmer, Jr. — D.C.
A.B. 1942, Westminster College

Shah, Ahmed Mashud — Pa.

Shah, Mohd Ayoub — D.C.
A.B. 1948, Lucknow University, Pakistan

Shahnan, Mian Abraham — D.C.
B.S. 1942, College of William and Mary

Shain, Fred Joseph

Shakely, Delaine — Ohio

Shaler, Alden Augustus — D.C.

Shaner, Robert Allen — S.C.
A.B. 1948, College of the City of New York — Va.
M.B.A. 1951, Hofstra College

Shanet, Lucy Beale

Shanks, George Boyd — D.C.

Shanks, Ira Lean — Md.
A.B. 1952, Washburn University — Va.

Shanks, Betty Lou
A.B. 1954, The George Washington University — Iowa

Shapiro, Eugene Everett
A.B. 1949, The George Washington University — Md.

Sharbaugh, Sheila Mary
A.B. 1954, St. Joseph's University — D.C.

Sharman, Robert Hall — N.J.
A.B. 1951, Dartmouth College

Sharp, Evelyn Sawyer — D.C.

Sharp, Gustave — Md.
A.B. 1948, Bowdoin College

Sharp, Lee — D.C.

Sharp, Mitchell — N.Y.
A.B. 1948, Bryn Mawr College

Sharpe, Jessie Anne

Sharpe, Joseph Ivey — Md.

Sharpe, Lila Gault — N.Y.

Sharpe, Thomas Leland — Va.

Sharrard, Donald Lewis — Va.

Sharon, John Hunford — N.J.
A.B. 1949, Princeton University

Sharon, Wayne Allen — D.C.

Sharp, Clayton Randolph — Va.

Sharp, Samuel Leonard — Md.
J.D. 1924, LL.M. 1939, University of Warsaw

Sharpe, Ronald Vincent — N.Y.

Shattuck, William Ely — Ill.
A.B. 1948, Elmhurst College
J.D. 1951, Northwestern University

Shaver, Grace Vernon — Md.

Shaw, Alton Rowland — Mich.
B.B.A. 1955, Detroit Institute of Technology

Shaw, Clarence Grant — Va.

Shaw, David Wootton — Md.
B.S. 1951, Pennsylvania State Teachers College
Ed.M. 1956, Duke University

Shaw, Markell Bruce — Va.

Shaw, Richard Lawrence — Va.

Shaw, Roger Neil — Md.
A.B. 1954, Catholic University of America

Shaw, Russell Howard — Pa.

Shaw, Seth Thomas, Jr. — D.C.

Shaw, James Joseph — D.C.

Shea, Gordon Francis — D.C.
A.B. 1950, Syracuse University

Shea, John Timothy — Md.

Shea, Mary Elizabeth — Conn.

Shea, Patricia Lucy — Va.
A.B. 1951, Western Maryland College

Sheats, Johnston Lewis — Va.

Shelor, John Howard III — Va.
A.B. 1942, Williams College

Shechtman, Jesse Isaac — Ill.
M.B.A. 1951, University of Chicago

Sheer, Leon Gilbert — D.C.

Sheffer, Albert Lester II — Pa.
B.S. 1952, Franklin and Marshall College

Shea, Henry Leland — D.C.
B.M.E. 1953, North Carolina State College

Sheley, Margaret Ann — D.C.
A.B. 1952, College of Wooster

Shelton, Catherine Mary — D.C.

Shelton, Joseph William — Va.

Shelton, Naylor — D.C.
A.B. 1931, Amherst College

Shepherd, Margaret MacKenzie — Mich.
A.B. 1924, University of Michigan

Shepro, Merrill James — D.C.
B.S. 1944, M.S. 1947, D.D.S. 1948, University of Illinois

Sherard, Virginia Mae — Texas
A.B. 1950, A.M. 1951, The George Washington University

Sherertz, Paul Claiborne — D.C.
B.S. in E.E. 1951, Duke University

Sheridan, Beverley Spratt — Md.
B.S. 1944, Brooklyn College
A.M. 1950, University of Maryland

Sheridan, Paul Fleming — Va.

Sheridan, Robert Anthony — D.C.
A.B. 1948, The George Washington University

Sherrill, William James — Va.

Sherrow, Harold Malone — Md.
B.S. 1950, University of Maryland

Sherline, Lee Stanley D.C.
Sherman, Edward Lawrence Ill.
A.B. 1951, A.M. 1953, Roosevelt University
Sherman, Stanley Morton D.C.
B.S. 1950, University of Maryland
Sherman, William Louis N.Y.
B.S. 1952, University of Maryland
Sherr, Stanley Irwin D.C.
Sherrard, Sharon Catherine D.C.
Sherry, Vincent Jerome Ky.
A.B. 1951, Western Kentucky State College
Sherwood, Bettinie Wenat Md.
Sherwood, James Stock Va.
A.B. 1947, LL.B. 1951, The George Washington University
Sherwood, Jeanne D.C.
B.S. 1945, Central Michigan College
A.M. 1954, The George Washington University
Shields, Mary Dorothea D.C.
Shields, Katherine Hartsett Va.
A.B. 1925, College of New Rochelle
L.M. 1927, Boston Teachers College
Shimer, Edna Compton D.C.
Shiflett, Ernest Rodney D.C.
Shipley, Raymond Salmon Texas
Shipley, Harry David D.C.
Shipp, Lucille Mellon Hawaii
B.S. in B.A. 1951, University of Denver
Shin, Young Sup Korea
Shinn, Herbert Kenki Hawaii
A.B. 1952, University of Hawaii
Shinnebarger, Jeanne D.C.
Shinnick, Mary North Md.
A.B. 1926, Vassar College
Shinnerman, Richard Archer D.C.
A.B. 1950, University of California
Shinnick, Monica
Shipley, Marguerite Louise W Va.
A.B. 1933, Shepherd State College
Shipp, M. Young D.C.
Shipley, James Parker Md.
Shipman, William Edward Md.
Shipley, Mary E. Va.
B.S. 1943, Russell Sage College
Shipman, Barbara Anna Va.
Shipman, Paul Wells Md.
A.B. 1945, The George Washington University
Shipman, George Annesley Pa.
Shipp, Ralph Earl Md.
Shipp, Gilbert LaRue Pa.
Shipman, Bernard Edward, Jr. Va.
B.S. 1948, College of the Holy Cross
Shipp, Sarah Gabriel D.C.
Shipman, Charles Levin Pa.
Shipman, Donald Pa.
B.S., B.Ed. 1951, Pennsylvania State Teachers College, Mansfield
Shipman, Earl Ray Ohio
B.S. in Ed. 1954, Ohio University
Shipman, Eleanor Anne Pa.
Shipman, Dorothy Sherman Va.
Shipman, Mary Sandra Md.
Shipman, Paul Robert D.C.
Shipman, Robert Frank, Jr. D.C.
Shipp, Marcia Ethel Md.
Shipp, Martha Burke D.C.
Shipp, Marcia Frances Pa.
Short, Morris Robert D.C.
A.B. 1938, A.M. 1947, The George Washington University
Ph.D. 1952, Columbia University Va.
Shoup, Caroline Elizabeth
A.B. 1955, The George Washington University Va.
Shoup, Frank Elliott
B.S. 1923, U.S. Naval Academy Va.
Shoup, Zola Margaret
A.B. 1925, Indiana University D.C.
Shower, Harry Thomas Md.
Shumaker, Roger Emerson D.C.
Showell, Arthur Albert
A.B. 1945, The George Washington University Md.
Shpritz, Neil Marcus Va.
Shreve, James Southern Va.
Shreve, Judith Hall
A.B. 1952, The George Washington University D.C.
Shropshire, Jean Ida Patricia
B.S. 1954, Miner Teachers College D.C.
Shropshire, Walter Allen, Jr.
B.S. 1954, The George Washington University N.J.
Shuba, Robert Joseph D.C.
Shuck, Herbert Glenn D.C.
Shuken, Robert Ezdal Md.
Shulman, Marianne
Shumaker, James Wheeler
B.S. 1947, Salem College Md.
M.S. 1952, West Virginia University N.Y.
Shumaway, Carl Kline D.C.
Shumway, Virginia Kastelic Kans.
Shupe, Anthony Pierce
Shupe, Walter Castle
A.B. [illegible] 1944, The George Washington University D.C.
Shuster, Alan
B.B.A. 1954, College of the City of New York Ga.
Va.
Shupack, Mae Elizabeth
Shuttle, Eleanor Waite D.C.
A.B. 1918, University of Iowa
Sibley, Allen Kingsland
B.S. 1933, U.S. Naval Academy
A.B., B.S. [illegible], A.M. 1943, Oxford University Mass.
Ind.
Siegel, Joseph Robert
Siegel, Mary Ida Va.
B.S. 1948, Western College for Women
Sie, Ruth Virginia D.C.
A.B. [illegible], Ohio Wesleyan University Va.
Md.
Siegel, Charles Ira
Siegel, Hyman M.
Siegel, Jerome Lee
B.S. 1954, The George Washington University Ohio
D.C.
Siegel, Miriam Leslie Ohio
Siegel, William Marvin
Siegel, William Edward
A.B. 1950, The George Washington University N.Y.
Md.
Siegman, Virginia
Siegmund, Lindsay Dorsey
A.B. 1948, Ed.M. 1953, Western Maryland College
B.S. 1951, Maryland State Teachers College D.C.
Siegrist, Leonard Charles, Jr.
Siegrist, Veronica

Sgalos, George Lucas — N.Y.
A.B. 1955, Lafayette College
Sgroi, Ignazio Lucas — N.Y.
B.S. 1942, Cornell University
Shaaf, Michael Anthony, Jr. — N.J.
Shaar, Constance Esther — D.C.
Shaar, Eisenhower Booth — Miss.
Shaar, Hesper Bessen — Ga.
Shaar, Ira Samuel — D.C.
A.B. 1940, The George Washington University
Shaar, Larry Bertrand — D.C.
Shaar, Robert Fortune — Va.
A.B. 1950, University of Virginia
Shaarman, Malcolm S. — N.Y.
Shaarman, Mary Donald — D.C.
Shaarman, Ruth Florine — Md.
Shaarman, Samuel — D.C.
Shaarman, Warren Edwin — Md.
Shaarman, Abraham — D.C.
Shaarman, Benjamin Lyons — Md.
B.S. 1942, Webb Institute of Naval Architecture
M.S. 1947, Massachusetts Institute of Technology
Shaaraway, Emory James — Ohio
B.S. 1952, Western Reserve University
Shaaraway, Robert Lockey — D.C.
B.S.E.E. 1954, Columbia University
Shaaraway, Virginia Thelma Lee — Texas
B.S. 1945, University of Illinois
M.S. 1952, Southern Methodist University
Shaaraway, Lindsay Palmer — D.C.
Shaaraway, Thomas Woodrow — Va.
A.B. 1940, Greenville State College
A.M. 1950, West Virginia University
Shaaraway, Patricia Ann — D.C.
A.B. 1947, Beth Israel University
Shaaraway, Thomas Mac — D.C.
Shaaraway, Ralph Adams — Md.
B.S. 1952, University of Maryland
Shaaraway, Sonia Pearl — D.C.
Shaaraway, Thomas Freeman — D.C.
Shaaraway, Lucille Clark — Va.
Shaaraway, Marvin Victor — D.C.
Shaaraway, Morton — D.C.
Shaaraway, Augustine — D.C.
Shaaraway, Ruth Rottman — Va.
A.B. 1937, The George Washington University
Shaaraway, Samuel Edward — Va.
A.B. 1941, The George Washington University
Shaaraway, Paul Jane — N.C.
Shaaraway, Richard Thomas — D.C.
Shaaraway, Wilbur Hamilton — Md.
Shaaraway, Wilbur Hamilton — Md.
Shaaraway, Elmer Ira — Va.
Shaaraway, Thomas Mitchell — Md.
A.B. 1950, The George Washington University
Shaaraway, Richard Joseph — D.C.

Shaaraway, Robert Dunne — Va.
A.B. 1942, University of Wisconsin
Shaaraway, Sidney Appleman — Md.
B.S. 1953, The George Washington University
Shaaraway, Ruth Jones — D.C.
Shaaraway, Robert Money — Md.
Shaaraway, Bessie Gertrude — D.C.
Shaaraway, Harold Dunn — Va.
B.S. in M.E. 1954, University of Oklahoma
Shaaraway, Donald Edward — D.C.
Shaaraway, Ivan — D.C.
LL.B. 1949, University of Salta
LL.D. 1952, University of Innsbruck
Shaaraway, Harriet Keenan — D.C.
Shaaraway, Marvin Phillip — D.C.
B.S. 1954, The George Washington University
Shaaraway, Samuel Paul — D.C.
Shaaraway, Henry Thomas, Jr. — Md.
B.S. 1954, University of Maryland
Shaaraway, Jeanne Sue — Md.
A.B. 1951, University of Maryland
Shaaraway, David Irving — N.Y.
B.S. 1950, College of the City of New York
A.M. 1952, The George Washington University
Shaaraway, Genevieve — D.C.
Shaaraway, James Rolland — Md.
B.S. 1948, West Virginia University
Shaaraway, Robert Holland — W.Va.
A.B. 1951, West Virginia University
Shaaraway, Robert K. — Utah
B.S. 1951, Utah State Agricultural College
Shaaraway, David — Wash.
A.B. 1951, University of Washington
Shaaraway, George Frederick — Mass.
A.B. 1950, Harvard University
Shaaraway, Jean Eldred — Fla.
A.B. 1948, Syracuse University
Shaaraway, Leonard Morris — D.C.
B.S. in Ed. 1954, Northeast Missouri State Teachers College
Shaaraway, Richard Morris — Md.
A.B. 1949, Knox College
M.S. 1950, Columbia University
Shaaraway, Vera Kathryn — D.C.
A.B. 1948, Western State College
Shaaraway, Charles Louis — D.C.
A.B. 1952, American University
Shaaraway, Helen Frances — Pa.
Shaaraway, Thomas Ryan — Va.
B.S. 1950, U.S. Military Academy
Shaaraway, Nicholas — Pa.
B.S. in Mine Eng. 1950, M.S. in Mng. Eng. 1951, Pennsylvania State University
Shaaraway, Lois Joseph — Kans.
A.B. 1954, University of Maryland
Shaaraway, Jean Lucas — Texas
Shaaraway, Theodore Major — Va.
A.B. 1948, Washington and Jefferson College
Shaaraway, Jean Park — D.C.
Shaaraway, Kenneth Ann — Md.
Shaaraway, Robert Whitelaw — Md.
Shaaraway, Thomas Rodney — Pa.
Shaaraway, Marion Moore — Va.
B.S. in C.E. 1947, The Citadel

Slaughter, Evelyn Phoebe — D.C.
Slavin, Henrietta Ann — Texas
Slayton, Betty Mildred — Va.
Slayton, William Tait — Md.
Sleeman, Rochelle Susan — N.Y.
Slette, Darrell Roger — Wis.
B.S. 1954, University of Wisconsin
Slucky, Edward Joseph — Md.
Slusher, Donald Allen — Va.
A.B. 1954, Princeton University
Slutkin, John Victor — Md.
Smallwood, Margaret Talbott — Md.
Sloane, Charles Fred III — D.C.
B.S. 1954, College of William and Mary
Sloan, Sheila Mary — Md.
A.B. 1954, The George Washington University
Sloat, Frank Truman — Md.
B.S. 1954, U.S. Naval Academy
Sloat, Herbert Maitland, Jr. — D.C.
A.B. 1952, The George Washington University
Sloat, Jonathan Welsh — D.C.
A.B. 1950, Yale University
Sloop, Richard Carlton — Va.
B.S. in Ed. 1955, Madison College
Slusser, John Henry — Md.
Slusser, Gilbert Morton — Md.
B.B.A. 1954, University of Massachusetts
Sluss, James Marcus — Md.
Slyk, Mildred — Pa.
Small, James Curtis — N.J.
Smallwood, Clayton Everett, Jr. — Md.
Smallwood, Robert Franklin — Va.
Smarr, Louise Madeleine — N.C.
A.B. 1952, Wake Forest College
Smart, Nora — Va.
Smart, Pendleton Pandora — D.C.
Smedile, Angelo John — Conn.
A.B. 1949, Indiana University
Smiley, Frederick Franklin — Ohio
A.B. 1951, Sacramento State College
Smith, Alice Oliver — D.C.
B.S. 1951, The George Washington University
Smith, Ada Mae — D.C.
B.S. 1953, Miner Teachers College
Smith, Annabelle — D.C.
Smith, Albert B. — D.C.
Smith, Allan — D.C.
Smith, Anne Marie — Ill.
Smith, Andrew Gow, Jr. — D.C.
Smith, Annie Florence — D.C.
Smith, Archie Lee — Md.
B.S. 1954, The George Washington University
Smith, Arlene Ruth — D.C.
Smith, Arthur Zeigler — Va.
Smith, Ashley Cornelia — D.C.
A.B. 1954, The George Washington University
Smith, Audrey Ruth — D.C.
B.S. 1947, Miner Teachers College
A.M. 1953, Columbia University
Smith, Barbara Adah — Pa.
A.B. 1954, Westminster College
Smith, Barbara Barnettia — Del.
Smith, Barbara Jeane — D.C.
Smith, Bernard Alfred — N.Y.
B.S. 1949, Syracuse University
Smith, Betty Jane — D.C.

Smith, Beverly Anne — Ca.
A.B. 1954, University of California
Smith, Bonnie Dora — N.B.
Smith, Charlene Beverly — [illegible]
Smith, Charles Franklin, Jr. — Va.
B.S. 1955, University of Maryland
Smith, Charles Harry — Md.
Smith, Charles Nesbitt — Md.
Smith, Clara Mae — Va.
Smith, David Forsythe — Va.
Smith, David Francis Xavier — D.C.
Smith, Donald Boutwell — Md.
Smith, Donald David — Va.
Smith, Donald Joseph — Va.
B.S. 1953, Bucknell University — Md.
Smith, Donald Kaye — Md.
A.B. 1954, University of Maryland
Smith, Donald Martin — D.C.
A.B. 1942, Western Maryland College
Smith, Doris Elizabeth — Md.
B.S. 1952, Miner Teachers College
Smith, Dorothy — N.J.
Smith, Dorothy Ingersoll — Md.
Smith, Earl Lawrence, Jr. — Va.
Smith, Earl Raymond — Md.
LL.B. 1943, Columbus University
Smith, Eben Elliot — D.C.
A.B. 1950, Boston University — Va.
Smith, Edwin George — N.Y.
Smith, Elbert Kenner — Pa.
Smith, Elsie Williams — D.C.
Smith, Elizabeth Wendling — [illegible]
B.S. 1923, Wilson College
Smith, Elmer Trexler — Md.
B.S. in Ed. 1951, Temple University — Md.
Smith, Emery Conway — Va.
Smith, Frank White — [illegible]
Smith, Franklin Glenn — Md.
A.B. 1950, University of Arizona — [illegible]
Smith, French Crawford — Va.
Smith, Frederick Kenneth — Pa.
Smith, George Dee — Pa.
Smith, George Francis — D.C.
Smith, George Raymond — Md.
Smith, Gladys — [illegible]
Smith, Gladys Holmes — Ohio
B.S. 1948, Wilson Teachers College — Va.
Smith, Glen Rowe — [illegible]
Smith, Glenn Avon — Iowa
A.B. 1950, Central State College
Smith, Gordon Walter — Calif.
B.S. 1950, U.S. Naval Academy
Smith, Hazel Huber — D.C.
A.B. 1950, University of California
Smith, Helen Ormsbee — Ohio
B.S. 1950, Miner Teachers College — Pa.
Smith, Howard Wayne — Md.
Smith, Hubert Clarence, Jr. — [illegible]
Smith, James Compton, Jr. — [illegible]
A.B. 1952, University of Maryland — Md.
Smith, James Donald — [illegible]
A.B. 1941, University of Omaha — S.D.
A.M. 1944, Western Reserve University
Smith, James Ewing — [illegible]
B.S. 1952, South Dakota School of Mines and Technology — Md.
Smith, James Joseph — Md.
Smith, James Monroe — [illegible]
B.S. 1950, Hampton College
Smith, Janet Marie — [illegible]
B.S. 1950, University of Rhode Island

Smith, Jean Rowe Md.
A.B. 1954, University of Maryland
Smith, Jeremiah Talbot D.C.
A.B. 1951, LL.B. 1953, The George Washington University
Smith, Jesse Robinson, Jr. D.C.
Smith, Joan Michael Va.
Smith, John Francis D.C.
Smith, John Joseph Md.
A.B. 1955, Seton Hall University N.J.
Smith, Joseph Bowden, Jr. Md.
B.F.A. 1951, University of Florida
Smith, Joseph Edward D.C.
B.S. 1951, Georgetown University
Smith, Katherine Anne Va.
Smith, Kirk Brannam Va.
Smith, Leonard Weightman Va.
Smith, Lewis Carolina N.M.
B.S. in C.E., 1955, New Mexico College of Agriculture and Mechanical Arts
Smith, Lorelle Thompson D.C.
B.S. 1955, Miner Teachers College
Smith, Mansfield Perry Williams Calif.
Smith, Margaret Smythe Va.
Smith, Marie Sidonie Fla.
Smith, Mary Elizabeth D.C.
B.S. 1954, Roosevelt University
Smith, Mary Lee Va.
A.B. 1944, University of Richmond
A.M. 1955, School of Advanced International Studies
Smith, Matthew Slattery Md.
B.S. in A.E. 1941, University of Alabama
Smith, Mildred Evans Va.
A.B. 1947, A.M. 1951, University of Texas
Smith, Mina Dale
Smith, Minard Jonathan Oreg.
A.B. 1950, Bryn Mawr College D.C.
Smith, Noel Irving Iowa
B.S. 1951, Iowa State College
Smith, Paul James Va.
Smith, Paul Pearce D.C.
Smith, Perrand Leonard, Jr. Md.
A.B. 1954, Yale University
Smith, Richard
Smith, Richard Arlen D.C.
A.B. 1954, St. John's College N.C.
Smith, Richard Leon
Smith, Richard Robert D.C.
A.B. 1955, University of Chicago Ill.
Smith, Richard B.
Smith, Robert Clyde, Jr. Miss.
Smith, Robert Cyrus Va.
A.B. [illegible] University
Smith, Robert Harwell Va.
B.S. in E.E. 1949, University of Maryland Md.
Smith, Robert Louis
B.S. in E.E. 1955, California Institute of Technology Calif.
B.S. in E.E. 1951, Massachusetts Institute of Technology Mass.
Smith, Robert Sloan
Smith, Robert Tynes III Md.
A.B. 1948, The George Washington University Va.

Smith, Roberta Zelmer Va.
Smith, Ronald Walter Md.
B.S. 1951, University of Maryland
Smith, Rosemary Webster Va.
B.S. 1950, St. Lawrence University
Smith, Roy Alexander Va.
Smith, Roy Lenthall, Jr. D.C.
A.B. 1948, The George Washington University
Smith, Shirley Ann N.Y.
Smith, Sidney Raymond D.C.
Smith, Solveig Lagerheen Md.
Smith, Stanley Shenard D.C.
Smith, Stanley Vernon Va.
A.B. 1942, University of Buffalo
A.M. 1947, Cornell University
Ph.D. 1954, Columbia University
Smith, Stuart Magill D.C.
A.B. 1955, The George Washington University
Smith, Susan Deborah Calif.
Smith, Thomas Lionel D.C.
Smith, Thomas Eugene Md.
B.S. 1951, Missouri School of Mines
Smith, Thomas Lewis Md.
Smith, Timothy Edward Md.
A.B. 1927, Susquehanna College
A.M. 1934, New Jersey State Teachers College, Montclair
Smith, Waldron Perry, Jr. N.J.
A.B. 1954, Marietta College
Smith, Walter Va.
Smith, Warren D.C.
Smith, Warren Willis Ohio
Smith, Wayne Leroy Calif.
Smith, William Andrew Md.
B.M.E. 1950, Catholic University of America
Smith, William Edward D.C.
Smith, William Lee N.J.
Smith, William Mackey Md.
A.B. 1950, University of California
Smith, William Parkhurst, Jr. D.C.
A.B. 1951, The George Washington University
Smith, William Patrick D.C.
Smith, Willis B. Ga.
Smith, Yvonne Franklin D.C.
Smithson, Clyde Elmer D.C.
Smithwick, Floyd Roberts, Jr. D.C.
A.B. 1955, The George Washington University
Smoot, Jeannette Pa.
Smyth, Constantine Joseph D.C.
Snapper, Ethel Hyman Va.
A.B. 1941, Randolph-Macon Woman's College
Snavely, Everett LeRoy Mass.
Snapp, Ralph Bruce Md.
B.S. in M.E. 1948, Carnegie Institute of Technology
Snavely, Carl Miller, Jr. Pa.
Snead, Fred Augustus D.C.
Snead, Hal Meadow Va.
Snedeker, Earl Allen Pa.
B.S. 1918, U. S. Naval Academy
Sneed, Gregory Francis Conn.
Sneller, Edwin Wallace Va.
A.B. 1947, Princeton University
Snider, Eldon Earl Md.

Snodgrass, Ernest Walter — Md.
A.B. 1912, Morris Harvey College
A.M. 1920, West Virginia University

Snow, Suzanne — Va.
A.B. 1926, University of Kentucky

Snow, Beatrix — Mass.
A.B. 1905, A.M. 1916, Radcliffe College

Snow, Russell Ray — D.C.

Snow, Thomas Lawrence — D.C.
A.B. 1931, The George Washington University

Snowden, Hugh Howard — Md.
B.S. 1928, University of Maryland

Snyder, Arnold Lee, Jr. — Va.

Snyder, David Deal — Conn.
B.S. 1928, Northwestern University

Snyder, Edward James — D.C.
A.B. 1932, Catholic University of America

Snyder, Grace — N.Y.
B.S. 1928, Syracuse University

Snyder, Irwin Lee — Md.

Snyder, Robert Wadsworth, Jr. — Calif.
B.S. 1928, University of California

Snyder, Sallie Charles — Md.

Snyder, Velma Hill — D.C.

Soeland, Irving Ira — D.C.
B.S. 1932, College of the City of New York

Soeltz, Maurice — D.C.
A.B. 1928, Hunter College

Sohl, Mary Ann — D.C.
B.S. 1932, The George Washington University

Sohlbrand, Carl Otto — D.C.

Sohlbrand, Mary Jo — D.C.

Sohlberg, Emily — D.C.

Sohng, Kwang Jung — Korea
A.B. 1934, Seoul University

Sokolowsky, William — N.Y.
A.B. 1931, The George Washington University

Sole, Maurice Constant — D.C.

Solek, George Andrew — Pa.

Solem, Hiram Thomas — Md.
B.S. in E.E. 1928, University of Minnesota

Soles, Edna Constance — Mass.

Soles, Wendell — Ill.

Solis, Crescencia — Nicaragua

Solomon, Alma Lee — D.C.
B.S. 1934, The George Washington University

Solomon, Bessie Solomon — Alaska
A.B. 1932, New Mexico Highlands University

Solomon, Edward W. — Va.
B.Ped. 1930, University of California at Los Angeles
A.M. 1931, The George Washington University

Solomon, Lillian Glenn — D.C.

Solomon, Mary Bernice — Va.
B.S. 1935, The George Washington University

Solomon, Solomon — D.C.

Solomons, Rosalie Jane — D.C.

Somers, Marion Woodhouse — D.C.
A.B. 1929, The George Washington University

Somerville, Emma Mary — D.C.

Somervell, Rakem — Turkey

Somervell, James Alexander — D.C.

Sommer, Mildred Sumter — Va.

Sommer, William Frederick, Jr.
B.S. in M.E. 1930, Purdue University — Va.

Sompayrac, Susan Bruen — Md.

Sonday, Francis Vincent — D.C.

Sonne, Jeanette Molly — D.C.

Sonnett, Stephen Robert — Iran

Sonnett, Purvis
A.B. 1931, Temple University
M.S. 1932, University of Pennsylvania — Va.

Sorrell, Frederick Maurice — W.Va.

Sorrells, Dorothy Irene — D.C.

Sorrells, Stanley Robert — Ohio

Sorsbie, Norman Walter — D.C.

Sorsbie, Calvin Archa — D.C.

Sossaman, Lewis
B.S. in Phar. 1935, The George Washington University — Md.

Soter, Richard Joseph
A.B. 1934, University of Maryland — D.C.

South, Marie Louise Sachs
A.B. 1913, University of Munich — Va.

Southam, Robert Lawrence — N.Y.

Southwood, [illegible] — N.Y.

Sowers, Marguerite Ann
B.S. 1933, Purdue University — Ind.

Sowers, Elizabeth Jane — Va.

Sowers, Kenneth Malcolm — Mich.
A.B. 1934, Bard College

Spahr, Lena Yeamans — W.Va.

Spaid, Grace Henry — Ind.

Spangler, Rebecca Lewis

Spangler, Randall Tate, Jr. — N.J.
A.B. 1933, Duke University

Spann, Lee John
B.S. 1931, Georgetown University
M.B.A. 1933, Columbia University — D.C.

Sparacino, Pasquale Vincent — Md.

Sparks, Marion Marcus

Sparks, Arthur Edmund
M.E. 1933, Pennsylvania State University — Md.

Sparks, Daniel Dale — W.Va.
B.S. in M.E. 1928, Purdue University

Sparks, Dwight Wells — Ohio
B.S. 1928, Ohio State University

Sparo, Marie Patricia — Va.
A.B. 1931, University of California — Md.

Spaulding, Thomas Hume

Spaulding, William Samuel

Spaulding, Wilbur Hall
B.S. 1930, A.M. 1934, The George Washington University — D.C.

Spaulding, Grace Anne — Ohio

Spaur, Richard Allen — Va.
E.M.E. 1931, [illegible] State University

Spaur, Spencer Weaver

Spaulding, Gilbert S., Jr. — N.J.
B.S. 1931, U. S. Military Academy

Spaur, Edmund Allen — D.C.

Spaur, Katherine — Mass.
B.S. 1928, Massachusetts Institute of Technology

Spellman, Lawrence William — Ga.

Spence, Julia Elizabeth

Spence, Lucille Virginia — Va.
B.C.S. 1931, [illegible] Institute of Technology — D.C.

Spencer, Lucille V.

Spencer, Cheryl Thomson
A.B. 1934, The George Washington University — D.C.

Spencer, Doris White

Spencer, Eugene Warren Md.
A.B. 1943, Western Maryland College
Spencer, Gilbert L.
Spencer, Iva Alexandra D.C.
Spencer, Maurice Vernon D.C.
Spencer, Melvin Maurice D.C.
B.S. 1953, North Carolina College at Durham
A.M. 1954, University of Iowa
Spencer, Ray
A.B. 1941, The George Washington University Va.
Spencer, Thomas Klauder
B.S. 1944, U.S. Military Academy Va.
Spencer, Anne Hunter
Spencer, Dexter Beaucort Md.
Spencer, Peter James Md.
A.B. 1954, Yale University
Spencer, Franklynn Robert N.J.
B.S. 1944, U.S. Naval Academy Wis.
A.M. 1955, University of Illinois
Spencer, Samuel
A.B. 1928, M.S. in Ed. 1949, College of the City of New York N.Y.
Spencer, Sylvia
Stanbery, Andrew Charles Md.
Stanbery, Thomas Andrew Mass.
B.S. 1950, University of Pittsburgh Pa.
Standiford, Lucian DeWitte, Jr.
Standley, Harold Va.
Standley, Howard Lester D.C.
Standley, Ivywil D.C.
B.S. Geology 1950, University of Utah Md.
Stanford, Ruth Gertrud D.C.
Stanford, Rutland D.C.
Stanley, Carr Anderson D.C.
A.B. 1943, The George Washington University
Stanley, Robert Pendleton
Stanley, Ruth Va.
Stanley, Thomas Williams D.C.
Stanley, Walter Earl N.Y.
Stanley, Mildred Roth D.C.
Stanley, Annie Ingersoll D.C.
Stanley, Lucy Sawyer College D.C.
Stanley, Thomas Jefferson
A.B. 1940, Emory University N.C.
Stanley, James
B.E.E. 1950, Cooper Union D.C.
B.E.E. 1952, The George Washington University
Stanley, Thomas Richard
Stanley, Thomas Parrish
Stanley, Virginia Scott Okla.
Stanley, Edward George D.C.
Stanley, Thomas Cranmer Va.
Stanley, Ellen Dade Sewell Academy Va.
M.S. 1951, Massachusetts Institute of Technology
Stanner, Raymond LeRoy
A.B. 1952, University of Toledo Ohio
Stansbury, Virginia
Stansbury, Doris E.
Stanton, Edward Leonard D.C.
B.E.E. 1951, The George Washington University D.C.
Stanton, Edward Andrew Va.
Stanton, Sally Rodgers Md.
Stanton, Agnes Ormond
Stanton, Paul Charles Va.
Stanton, Jean D.C.
Stanton, Edward Beary Va.
A.B. 1942, Dartmouth College D.C.
Vt.

Stafford, Marie Hattie Vt.
A.B. 1942, Georgian Court College
Stafford, Paul Gordon D.C.
Stageman, Anne Iowa
Stagmer, Marilyn Leanne Md.
Stahl, Robert Bernard Mich.
A.B. 1949, University of Michigan
Stahl, Robert Sheridan D.C.
Stair, William Earl Md.
A.B. 1951; A.M. 1953, University of Maryland
Stallard, Frederick Lloyd D.C.
Stallcup, William Paul, Jr. Md.
A.B. 1950, The George Washington University
Stallings, Robert Gordon Fla.
Stallmeyer, Constance A. D.C.
Stamper, Charles William D.C.
Stamper, William Clark Va.
Stancombe, Arnaldo Pa.
B.S. 1952, University of Pittsburgh
Standish, Catherine Jackson Va.
Standish, James McNeill, Jr. Va.
A.B. (cum) 1954, The George Washington University
Standley, Maxwell Md.
B.S. 1948, College of the City of New York
Standrod, John Melvin Md.
A.B. 1951, University of Illinois
Standridge, William Harold Calif.
B.S. in C.E. 1954, University of Southern California
Stanford, Caroline Faye Va.
B.S. 1953, Longwood College
Stanley, Harvey D.C.
Stanley, Thomas Lyon Pa.
A.B. 1954, Grinnell College
Stanley, Patricia Wynn Va.
Stansberry, Frederick Leroy Md.
Stansbury, Richard Donald Ohio
A.B. 1950, Oklahoma City University
Stanton, Antoinette Elwood Md.
Stanton, Thomas Cromer Va.
Stanton, William Edward, Jr. D.C.
Stanton, Marjorie Josephine Va.
Stapleford, LaRue Bonnie Md.
A.B. 1951, The George Washington University
Stapleton, Stanley Foster Va.
Stapleton, Florence Ann W. Va.
Star, Thurston Bernice D.C.
B.S. in E.E. 1951, Wilson Teachers College
Starr, Mary D.C.
B.S. in P.E. 1954, University of Maryland
Starck, Nancy Jane Va.
Stark, Peggy Alice Md.
Stark, William Rush D.C.
B.S. 1950, Maryland State College
Starkey, Lloyd Alexander D.C.
Starkey, Theodora Ford Md.
B.S. in E.E. 1951, University of Maryland
Starnes, Mary Muffin D.C.
Starr, Clarence Va.
A.B. 1953, University of Virginia
Starr, Sally Md.
A.B. 1949, Brooklyn College
A.M. 1951, The George Washington University

Stevens, George Lewis Va.
B.S. in E.E. 1948, Iowa State College of Agriculture and Mechanical Arts
Stevenson, Carrie T. Md.
Stevenson, Jeannette D.C.
A.B. 1933, A.M. 1934, The George Washington University
Stevenson, Betty Fletcher D.C.
Stevens, Barbara Ayer D.C.
Stevens, Bruce Edward D.C.
Stevens, James Pratt, Jr. Va.
Stevens, Donald Francis Calif.
Stevens, Marion Cole Md.
B.S. 1932, American University
M.S. 1934, Georgetown University
Stevens, Marjorie Lloyd Va.
Stevenson, Frank M., Jr. Md.
Steinberg, Curtis Reuben Ind.
Stevenson, Joel D.C.
A.B. [illegible] 1950, New York University
Stevens, Jean D.C.
Stevens, Leonard William D.C.
B.S. 1933, Ohio State University
Stevens, Henry Eustace Va.
Steele, Robert Irvin Va.
Stevens, Anna Julius D.C.
A.B. 1946, A.M. 1948, Howard University
Stevens, William Moore D.C.
A.B. 1931, Howard University
A.M. 1947, American University
Stebbins, Elizabeth Md.
Stevens, James Greig Va.
B.S. 1932, St. Francis College
Stevens, Milton D. D.C.
Stevens, Samuel G. Calif.
Stevens, Selma D.C.
Steinberg, Harry N.J.
B.E. in M.E. 1949, New York University
Steinberg, Harvey Bert Md.
A.B. 1948, The George Washington University
Steinberg, Susan Barbara N.J.
Stevens, Celia D.C.
Stevens, Pauline Bertha Mo.
A.B. 1948, The George Washington University
Steinbrugh, Herman Burt Mass.
A.B. 1949, Brandeis University
Stephenson, Paul William Md.
B.S. 1919, U. S. Naval Academy
Stevenson, Constance M. Ill.
Stevens, David Perry D.C.
Stevens, William Asdell Iowa
A.B. 1939, Drake University
A.M. 1950, The George Washington University
Steel, Jane Howell Md.
B.F.E. 1935, The George Washington University
Stephens, Anna D.C.
Stevens, Howard William D.C.
Stephen, Lloyd Wheatley D.C.
Stephens, Julia Murray Ohio
A.B. 1934, Ohio Wesleyan University
Stephens, Marcia Leslie Md.
B.B.A. 1948, University of Georgia
Stephens, Virginia Boyd D.C.
A.B. 1948, University of Utah
Stephenson, Clay Calhoun, Jr. Va.
B.B.A. 1947, Southern Methodist University
Stephenson, Richard Walter D.C.

Sterling, Doris Jean
A.B. 1948, Mary Washington College Md.
Sterling, Eleanor Hope D.C.
Sterling, Minnie Frederica D.C.
Sterling, Ronald Charles D.C.
Sterling, Sadie Meade D.C.
Stern, Beatrice Bee D.C.
Stern, Edith Anne Va.
Stern, Harriet Ann Ky.
Stern, Ingrid D.C.
Stern, Jane Blair
B.S. 1934, The George Washington University N.Y.
Sternfels, Fred Robert Va.
Stevens, Gladys May
A.B. 1940, Ohio Wesleyan University
A.M. 1942, New York University Ohio
Stevens, Donald Foster
B.S. 1949, University of Chicago Ill.
Stevens, Avis
A.B. 1934, The George Washington University Va.
Stevens, Daniel Roe Md.
Stevens, Eugene Evans
B.S. 1912, U. S. Naval Academy
A.M. 1934, The George Washington University Md.
Stevens, James Rutland N.J.
Stevens, Mary Pearl Va.
B.S. 1929, Hampton Institute D.C.
Stevens, Raymond Glen
Stevens, Robert Bond
A.B. 1948, The George Washington University D.C.
A.M. 1949, Columbia University
Stevenson, Eugenia Grace Sykes
B.S. 1949, The George Washington University D.C.
Stevens, George William D.C.
Stevenson, Gertrude Bowers Va.
Stevenson, Harold Ford D.C.
B.S. 1950, Georgetown University
Stevenson, Jack Donald
Stevenson, Orland Sykes Ind.
A.B. 1934, Asbury College Ind.
Stevenson, Robert Haven Mass.
Stevenson, Ruth Lenox
Stevens, Annie Gilbert Va.
B.S. Ed. 1937, Wilson Teachers College Md.
Stewart, Barbara Burton
Stewart, Clark Bell Md.
B.M.E. 1948, Cornell College Minn.
Stewart, Cecil Ray Va.
Stewart, Della White Va.
Stewart, Della Woodard
Stewart, George Marcellus, Jr. Minn.
B.S. 1948, U. S. Naval Academy
Stewart, John Lewis Va.
B.S. Ed. 1942, University of North Dakota Va.
Stewart, Marilee Mo.
Stewart, Mary McGinnis
Stewart, Radford College
B.S. [illegible] Mo.
Stewart, Maurice Wood Va.
B.S. in M.E. 1947, University of Missouri Mo.
Stewart, Noble Ellsworth Md.
Stewart, Paul Kennedy Md.
Stewart, Pearl Blount D.C.
Stewart, Roberta Jean
Stewart, Roger Daniels
Stewart, Walter Burton

Stewart, Walter Joseph Fla.
Stilwell, Beverly Joan Idaho
B.S., 1952, Brigham Young University
Stoneman, Eleanor Palmer Md.
Stoughton, Horace Dunbar Mass.
B.S., 1952, Massachusetts Institute of Technology
Stowe, William Wallace Va.
Strait, Edward Dion Va.
Strait, Lawrence Harold Va.
Strecker, Oscar Va.
B.S., 1952, U.S. Naval Academy Md.
M.S., 1953, Massachusetts Institute of Technology
Strong, Nathan William Va.
B.S., 1952, University of Oregon
Strother, Ingersoll D.C.
Stuart, Donald Allan Pa.
B.S., 1954, Duquesne University
Stuckey, Jeanne Lee D.C.
Stuckey, Jessica Rives Va.
Stuckey, Lawrence Charles Va.
Stuckey, Thomas Edward Va.
A.B., 1949, Hampden-Sydney College
AM., 1952, University of North Carolina
Studley, Elizabeth Laura D.C.
Studley, Harry Herbert D.C.
B.S. in M.E., 1948, Worcester Polytechnic Institute
Sturm, James Logan Va.
A.B., 1951, The George Washington University
Stuyvesant, Caroline Rutgers Va.
Suber, Alfred Reid Va.
Sullivan, Walter Leon D.C.
Sullivan, Mabel Marie Ohio
A.B., 1950, Howard University
Sullivan, Charles Patrick, Jr.
A.B., 1950, A.M., 1952, Harvard University Va.
Sullivan, Charles Dabney D.C.
Sullivan, Thomas Joseph Md.
A.B., 1952, The George Washington University
Summy, Cynthia Rae D.C.
A.B., 1951, American University
Sundquist, Marion Rosetta
Sutton, Nora May Va.
Swann, Julian Cummings Md.
Swann, James Lamond, Jr. D.C.
Swann, Thomas, Jr. La.
A.B., 1951, Princeton University
Swartz, Robert Arnold Va.
B.S., 1951, St. Michael College
Sweeney, Thomas Richard Sc.
B.S., 1952, U.S. Naval Academy
Sweet, Thomas Van Clief, Jr. Md.
Sweet, Alexander Greenwood D.C.
Ll.B., 1949, University of Delaware
Swem, Wilbur
B.A., 1948, College of the City of New York Md.
Swift, Arthur Craig
B.S., 1952, College of the City of New York D.C.
A.M., 1954, Minnesota State University Va.
Swift, Ivan
A.B., 1950, University of Montana
Swift, Wesley Campbell Mich.
B.S., 1954, Simmons College
Swope, Richard Ogden D.C.
A.B., 1952, Mercer University Ga.

Symon, Robert Oliver Md.
Symon, Samuel Bremner Va.
B.S. in E.E., 1935, Virginia Polytechnic Institute
Symon, Walter Kirtley Md.
Szczepanski, Patricia Ray Wis.
A.B., 1954, The George Washington University
Stroner, Elizabeth Ann Va.
Stroner, Patrick Rahm III Pa.
A.B., 1952, Indiana University
Szumowski, Dolores Lois Pa.
Szymczyk, Ann Andrews Md.
Szymon, Bernard D.C.
Szymyk, Jacob Henry N.Y.
B.S., 1948, M.S., 1949, The George Washington University
M.D., 1951, Howard University
Szymon, Charles Llewellyn Va.
Storey, Pauline Louis Ill.
B.S., 1951, Indiana University
Szymon, Elmer Lee Md.
Szymon, Jane Nebraska
Szymy, Emil Lawson Md.
Szymczyk, Roger D.C.
Szymon, John Matthew III Pa.
B.S. in M.E., 1952, Pennsylvania State University
Szymon, Carroll Montgomery Md.
Szymon, Robert Edgar Va.
Szymczyk, Harry Edgar W.Va.
Szymczyk, Natalie Louise Mo.
A.B., 1951, Hanover College
Szymon, Harold Warren Mass.
A.B., 1950, St. Olaf College
A.M., 1951, University of Wisconsin
Szymon, Betty Eugene D.C.
Szymon, Agatha D.C.
Szymon, Juliana Eugene Va.
Szymon, Tamara Joseph Md.
Szymon, Rose Mary Ky.
Szymon, Harvey Saul N.Y.
A.B., 1951, Brooklyn College
Szymon, Jordan Allen D.C.
Szymon, Joel N.Y.
Szymczyk, Francis Norman, Jr. D.C.
Szymczyk, Neal Edward Md.
A.B., 1951, Oberlin College
Szymon, Earl Wesley Va.
Szymon, Norman Harold D.C.
Szymon, Rosalyn Ruth Wis.
B.S., 1952, U.S. Naval Academy
Szymczyk, Charles Webster Ga.
Szymczyk, Mary Rebecca D.C.
Szymon, Cecil Eugene Va.
Szymon, Carlton Thomas Md.
Szymon, Henry Ray, Jr. D.C.
A.B., 1951, University of Delaware
Szymczyk, Verna Sonne Ky.
B.S., 1949, Western State College
Szymon, Jessie Steven Md.
Szymon, Lavon E. Mass.
A.B., 1951, Millsaps College
Szymon, Hubert A. Va.
B.S. in E.E., 1948, University of Southern California
Szymczyk, Robert Cabot Del.
A.B., 1951, University of Delaware
Szymon, Barbara Ruth Texas
A.B., 1949, Wheaton College
LL.B., 1952, University of Texas
Szymon, Vincent Dennis Md.

Taylor, Constance — D.C.
Taylor, Clyde Leroy — Md.
Taylor, Daniel Albert, Jr. — D.C.
Taylor, Dell Kenyon — Idaho
Taylor, Dorothy Jane — Texas
A.B. 1943, Rice Institute
M.S. 1947, Iowa State College
Taylor, Dyer Justice — Va.
LL.B. 1951, The George Washington University
Taylor, Eldon Eugene — Md.
Taylor, Elizabeth Margaret — Va.
Taylor, Eugene Field — Calif.
Taylor, Eugene Joseph — D.C.
A.M. 1948, University of Chicago
Taylor, Faith — D.C.
B.S. in Ed. 1935, Massachusetts State Teachers College
Ed.M. 1938, Harvard University
Taylor, Frank, Jr. — Ga.
A.B. 1948, Mercer University
Taylor, George Bruce — Calif.
Taylor, George Ethet — Va.
B.S. 1952, M.S. 1954, Marshall College
Taylor, Jack Gilbert — D.C.
Taylor, James William — N.Y.
B.S. in M.E. 1948, University of Rochester
Taylor, Jesse Kavanaugh, III — Texas
A.B. 1952, LL.B. 1954, University of Texas
Taylor, John Carruthers — D.C.
Taylor, John Henry — Va.
A.B. 1926, The George Washington University
Taylor, Leonard Lawrence — Md.
Taylor, Mary Martha — Va.
Taylor, Norman Robert — D.C.
B.S. 1951, University of Maryland
Taylor, Patricia Anne — Md.
Taylor, Ransom Francis — N.Y.
Taylor, Sherman M. — Ohio
Taylor, Susanne — Md.
Taylor, Thomas Edward — Tenn.
B.S. 1951, U. S. Naval Academy
Taylor, William Gordon — D.C.
B.S. 1950, University of Massachusetts
Taylorson, Stephen Arthur Harold — Va.
A.B. 1951, College of William and Mary
Teare, Donald Albert — Ohio
A.B. 1951, Yale University
Teasley, Patricia Anne — Va.
A.B. 1950, Mary Washington College
Tedeschi, Salvatore Peter — N.Y.
B.S. 1950, Fordham University
Teel, Richard Clark — Calif.
Temple, Lois Rita — D.C.
Templeton, Thomas Gardner — D.C.
Tennant, Gaynor B., Jr. — Va.
B.E. in B.A. 1934, University of Florida
Tennessen, Baldwin — Iran
B.S. 1951, Hamline College
Tenney, William Eugene — N.Y.
Lieutenant, Virgil Martin — Va.
Lieutenant, Edward Stanley — Pa.
Terenbaum, Morton — D.C.
B.S. 1951, Syracuse University
Terrell, Rodney Smallman — Va.
A.B. 1951, University of Virginia
Terrasse, Henry Rudiant — W.Va.
B.S. in E.E. 1951, West Virginia University
Terrazon, Benjamin Edward — V.
Terrazon, Theodore Magnus — V.
Tepper, Milton Leo
A.B. 1948, A.M. 1949, New York University
Terranda, Hugo Marija — D.
Terranda, John James — V.
Terry, Gomer Roy — V.
Terry, Guelda R. — V.
Terry, Paul Alfred — V.
Terry, Peggy Jean — V.
Terry, Robert Samuel — V.
TeSelle, John — V.
B.M.E. 1947, University of Florida
LL.B. 1951, University of Pennsylvania
Test, Jean Carol — M.
Teske, John Henry — V.
A.B. 1955, Washington Missionary College
Teter, Zola Lee — W.
Teuscher, Dorothy Marie — V.
Texelow, Frank Louis — V.
Thach, John Smith, II — V.
Thatcher, William Peter — V.
Thatcher, John Dukes — V.
A.B. 1928, Wofford College
Thaden, Maynard Edward — V.
Thalheimer, Betty A. — V.
Thalheimer, Walter S. — V.
Thanh, Nguyen Trung — V.
Tharp, Robert E. — V.
Thatcher, Dale Magnussen — V.
Thatcher, Gordon Nicholas — V.
B.S. 1953, Rollins College
Thau, John Sterling — V.
Thaxton, Stephens Arthur — V.
Thayer, Eleanore Harriet — V.
Thayer, Lawrence Sweetser — V.
A.B. 1938, The George Washington University
Thayer, Tom Phillip — V.
A.B. 1942, Cornell University
Thayer, Janet Cornelia — V.
Theilgaard, Patricia Ann — V.
Theobald, Ursula McElroy — V.
A.B. 1954, Barnard College
Thermell, Vera Marie — V.
Thibodeau, Charles Daniel — V.
B.S. in C.E. 1950, University of Vermont
Thibodeau, Delmar Adrian — V.
B.S. 1951, George Town University
Thiede, Frederick Charles — V.
A.B. 1941, Western Michigan College
Thiessen, Betty Jane — V.
Thiessen, Reverdy Madsen — V.
Thiessen, David Daniel — V.
Thiessen, Dave Martin — V.
A.B. 1954, The George Washington University
Thiessen, Earl G. — V.
Thiessen, Earl Eva — V.
Thiessen, Florence Virginia — V.
B.S. 1943, Maryland State Teachers College
Thiessen, Florence Delaplaine, Jr. — V.
A.B. 1939, Dartmouth College
Thiessen, Henry Sayers — V.
Thiessen, Howard Francis — V.
A.B. 1955, The George Washington University
Thiessen, Irene Esther — V.

Thomas, Jack L.
Thomas, James William, Jr. D.C.
Thomas, John Edward Md
Thomas, John Wesley Va
Thomas, Mary Sweet Va.
A.B. 1934, Texas Technological College Texas
Thomas, Raymond Edward
A.B. 1955, The George Washington University D.C.
Thomas, Richard Rudolph
Thomas, Robert S. Wash.
Thomas, Robert Bernard D.C.
B.S. 1952, University of California at Los Angeles Va.
Thomas, Ruby Rambaugh
Thomas, Stephen Leonard D.C.
Thomas, Sylvester D.C.
Thomas, Velma Eileen Liberia
Thomas, Edwin Marion Va.
B.S.E. 1950, Missouri School of Mines and Metallurgy Md.
Thompson, Charles Wayne
A.B. 1955, College of Emporia Va.
Thompson, Dorothy Moore
Thompson, Edgar Archer D.C.
B.S. 1948, Purdue University Pa.
Thompson, Eleanor Charlesworth, Jr.
Thompson, Frederick Lemuel Va.
Thompson, Garland Purnell Md.
Thompson, Grace Owens D.C.
Thompson, Gordon Eugene W.s.
Thompson, Hattie Lenard D.C.
A.B. 1939, Alabama State Teachers Va.
Thompson, James Edward
B.S. 1951, University of New Mexico N.M.
M.S. 1954, University of Wisconsin
Thompson, James Howard
Thompson, John Edward Md.
Thompson, John Marcus Va.
Thompson, Matthew Lawrence New
Thompson, Mary Elgin Pa.
Thompson, Merle Paul D.C.
Thompson, Nancy Langston Md.
Thompson, Rosa Dell Mass.
Thompson, Sandusky Fulton D.C.
Thompson, Vera Bishop Va.
Thompson, Columbia University Md.
Thompson, Wesley Church
M.S. 1951, U. S. Naval Academy S.D.
Thompson, University of Pittsburgh
Thompson, William L.
A.B. 1951, Howard University Va.
Thompson, William Burke
A.B. 1955, The George Washington University Va.
Thompson, William Frederick
Thompson, A. Bruce Md.
B.E.E. Cooper Polytechnic Va.
Thomson, A.M. 1937, Ohio State Va.
Thomson, Ian Ann
A.B. 1955, Skidmore College N.Y.
Thomson, Robert Malcolm
Thomson, Smoak Md.
B.S. 1951, The George Washington University D.C.
Thomson, Mildred Ann N.C.
Thomson, Jean Murray
Thomson, John Wesley III D.C.
Thomson, William Ann Md.
Thomsen, Elizabeth Janet Md.
Mich.

Thornton, Austin M., Jr. Ohio
A.B. 1951, Miami University
Thornton, Joseph Benjamin, Jr. D.C.
B.S. 1951, Miner Teachers College
Thornton, Marietta Ella D.C.
A.B. 1928, Howard University
Thornton, Mary Florence Calif.
Thornton, Richard Paul Va.
B.E.E. 1941, Purdue University
Thornton, Ruth Eupernia Va.
Thornton, Sydney D.C.
Thorp, Isobel Helen Va.
Thorpe, Edward Garnett D.C.
Thorpe, Harold Shenbourne Calif.
A.B. 1952, University of Maryland
Thorup, Shirley Stowell D.C.
B.S. 1955, University of Maryland
Thovenin, Violette Ena D.C.
A.B. 1944, Howard College
A.M. 1945, Columbia University
Thrall, Irving Russell D.C.
A.B. 1952, Wabash College
Thrift, Sydnor Wilson, Jr. Va.
A.B. 1949, Randolph-Macon College
Throckmorton, Robert Ray, Jr. Md.
Throckmorton, William Robert Va.
A.B. 1954, The George Washington University
Thurman, John N. D.C.
B.S. 1948, U. S. Merchant Marine Academy
B.S. in F.S. 1949, Georgetown University
Thurston, Alice Janet Md.
A.B. 1927, Denison University
A.M. 1928, Northwestern University
Thyfault, Thomas D.C.
Tibbles, William B. John D.C.
Tibbs, Charles S. D.C.
B.S. 1951, Howard University
LL.B. 1955, Howard Law School
Tichnor, Alan Nicholas N.J.
Tichey, Julius James Va.
Tichey, Timothy Charles Va.
Tidwell, Lenny Junior N.C.
Tiffin, Lee Thomas Va.
B.S. 1949, University of Nebraska
A.M. 1951, University of Denver
Tilghman, John George D.C.
A.B. 1951, M.S. 1954, The George Washington University
Tillotson, Virgil Howard Va.
Tillinghast, Frank Stoddard R.I.
B.S. 1948, U. S. Naval Academy
Timmons, Eugene T. D.C.
Timmons, John Francis Md.
Timmons, John Lester Va.
A.B. 1949, University of Minnesota
LL.B. 1952, University of Wisconsin
Tinnes, James Martin Md.
B.S. 1949, University of Maryland
Tinnon, Richard Karl Calif.
Tippy, John Lemuel Md.
B.S. 1954, The George Washington University
Tisdale, Annie Merry Md.
Titus, Robert Theodore D.C.
B.S. 1951, West Virginia University
Tiscornia, Jeanne Lorraine Fla.
B.S. 1951, Florida State University
Tisdale, Richard Stannard Mass.
A.B. 1950, Dartmouth College
A.M. 1954, Johns Hopkins University

Timberlake, Frederick C. Va
B.B.A. 1951, Westminster College
M.B.A. 1954, Ohio State University
Timken, Clayton Henry Md
Timma, Robert Vaughan Pa.
A.B. 1905, Virginia Military Academy
Tingle, Thomas Hughens Md.
Tinsley, Bernice Carroll D.C.
Tippetts, James Anderson III Va.
Tippett, James Talbot N.C.
B.E.E. 1948, North Carolina State College
Tipton, Clarence Lee Md.
Tipton, Reginald Graham Md.
Tisdale, Jacqueline May Va.
A.B. in Ed. 1954, The George Washington University
Tissot, Catherine Louise Conn.
A.B. 1954, Swarthmore College
Tittmann, Bernard Rainer Va.
Titus, Marion Ellsworth D.C.
B.S. 1950, University of Pennsylvania
Tjernell, Haynes D.C.
Tkach, Helen Weller Va.
A.B. 1941, Pennsylvania College for Women
Tobias, James Howard D.C.
Tobias, Thomas Victor Mich.
Tobin, Vincent Francis Pa.
Toda, Joesuke Joe D.C.
Toda, Kazuo Kenneth D.C.
A.B. 1946, The George Washington University
Toepperwein, Marion Thomas Texas
A.B. 1947, A.M. 1949, University of Texas
Todd, John Ames, Jr. D.C.
Todd, Marshall Thompson Va.
B.S. 1935, Ohio State University
Todd, Tresa LaVerne D.C.
Todd, Walden Robert Va
Tofani, Maurice Victor N.Y.
A.B. 1949, A.M. 1951, Columbia University
Toggas, Samuel Thomas D.C.
Tonge, Clarence Cano Pa
Toland, Leonora Marie D.C.
A.B. 1935, Trinity College
Toland, Margaret Mary D.C.
A.B. 1951, St. Joseph College
Toland, William Lyon Md.
Tolford, John Chandler Mich.
A.B. 1954, University of Michigan
Tolley, Gerald Maitland W.Va
Tolliver, Alice Elizabeth Va
Tolliver, Daniel Rush Va.
Tolman, Nevin Clark Va
Tomaschoff, Edwin Abraham Israel
Tomczykowski, William David Nebr.
Tomkins, Leonard George Va
Tomlin, Dennis William Md.
A.B. 1948, Morris Harvey College
Tomlinson, Floyd Pennell Ga.
A.B. 1955, The George Washington University
Tomlinson, Jean D.C.
A.B. 1942, Smith College
Tomlinson, Lewis Austin Swartz Pa.
B.S. 1941, Pennsylvania State University
Tompkins, James Marion Va
B.S. 1949, University of California at Los Angeles

Tompros, Ann Constantino D.C.
Tompson, Robert Vaughn Md.
Tonelli, Inez Mary D.C.
Tonelli, Loretta Anna Va
Toner, Mary Cunningham Va
Tonigan, Richard Francis
B.S. 1950, M.S. 1951, University of Illinois D.C.
Toole, Hibbard Charles Tenn.
Toomey, John Samuel W.Va.
A.B. 1949, The George Washington University
Toompas, Charles Arthur
A.B. 1938, West Virginia University
A.M. 1950, The George Washington University D.C.
Toothman, Harold Lee D.C.
Topalian, Lillian Mildred
A.B. 1951, Western Maryland College D.C.
Topalian, Nora Pauline
A.B. 1949, University of Maryland D.C.
Topelson, Vival Alexander D.C.
Topp, Joseph Donald Md.
Topping, Thomas Edwin Va
Torbert, Frances Roberts N.J.
Torella, Samuel Joseph D.C.
Torgerson, Arne Helmer Md.
Torrealba, Juan D.C.
Torres, Diego Ernesto
Torres, Emilio
B.S. 1933, National University, Manila
LL.B. 1937, University of the Philippines
Torres, Roberto Alberto Argentina
Toth, Ernest Edward D.C.
B.S. 1951, University of Houston Ohio
Toth, Irene Veronica Md.
Touchette, Robert Henry Va
Toulmin, George Bowers
A.B. 1937, A.M. 1947, University of Alabama D.C.
Tover, Jose Va
B.S. 1950, University of Texas N.H.
Towers, Robert Eugene
Towle, Edward Leon Calif.
A.B. 1952, Tufts College
Towles, William Julian Md.
A.B. 1954, Occidental College Va.
Towner, Patricia Ann D.C.
Townsend, George Franklin, Jr. N.J.
Townsend, Woodrow Emory Md.
Townshend, Alan Harrold
Townshend, Harrison Sterling Md.
A.B. 1953, Western Maryland College
Towson, Robert Fenn, Jr. Md.
A.B., M.B.A. 1952, The George Washington University
Tracy, Francis Gerald W.Va
B.S. 1952, University of Scranton Md.
Trail, Sylvia Jereldene
Traina, Dominick Robert D.C.
B.S. 1942, University of Maryland Mass.
Va.
Tranen, Arnold Jay D.C.
Trask, William Wyatt Va
Travaglini, Constance
Travers, William Robert Md.
Travers, Isabelle Catherine D.C.
A.B. 1953, University of Maryland
Traversky, Paul David Md.
Travis, Clyde Eugene
B.S. 1950, Howard University
Trayfors, Jane Corinne

Trengove, Harvey Charles Md.
Trengove, Stanley Thomas Md.
Trenton, Paul Ernest D.C.
Tresgrant, Mortie Washington S.C.
B.S. 1952, South Carolina State College
Treverton, Rosco Vincent Va.
Trimble, Anne P.
Trimble, Richard Clarence Md.
A.B. 1950, Kansas State Teachers Va.
College, Emporia
Triplett, William Everett Va.
B.S. 1942, Georgetown University
Trippe, Turner Clarence Md.
B.S. in B.A. 1948, New York University
Trites, Harriet Grace Va.
A.B. 1927, Wayne University
Trotter, Theresa Genevia D.C.
A.B. 1945, The George Washington University
Trotter, William Jennings
Trout, Robert Augustus, Jr D.C.
A.B. 1951, The George Washington Md.
University
Troop, Richard Gordon Va.
B.S. 1952, University of New Hampshire
Trostinsky, Charles Hilary D.C.
A.B. 1951, The George Washington
University
Trower, Charlotte Joyce
Trower, Gordon Trumbull D.C.
Truesdale, Phyllis Pleasant La.
A.B. 1952, Alabama College Md.
Trueblood, Winnie Wise
Trueblood, Emerson Saltonstahl Va.
Truehart, Jesse Paul Va.
B.S. in Ed. 1938, B.S. in Eng. 1942, Va.
University of Idaho
Truesdale, Celia Thompson
A.B. 1948, Duke University Va.
Truesdell, Donovan Fred
Trumbo, Joe Logan Colo.
Trumpeter, Paul Joseph Va.
Trundle, Joan Loretta Pa.
Trumpeter, Elizabeth Lee Place D.C.
Tsavaras, Democrans D.C.
Tse, You-Chi D.C.
Tsiakas, Steven Panagiotis Md.
B.S. 1952, Newton Hospital D.C.
Tsouras, Theodora Anastasia Fla.
A.B. 1952, Drake University
Tsuda, Nicholas
Tsuda, Carol Setsuko Fla.
B.S. 1952, Wilson Teachers College Va.
Tubb, Charles F. D.C.
Tubbs, Evelyn Jackson
A.B. 1950, McLean College D.C.
Tuberson, Donald Joseph Va.
Tucker, Muriel
Tucker, Emily Gisela N.Y.
Tucker, Jean Evans Md.
A.B. 1950, Mary Baldwin College Md.
Tucker, John Robert W.Va.
A.B. 1951, University of Maryland
M.I.A. 1953, Columbia University Va.
Tucker, Jonathan Stewart
Tucker, Lucille Carson
Tucker, Robert Wheeler D.C.
Ph.D. 1951, University of Chicago Va.
Tucker, Ronald Preston Va.
Tucker, Stevens Partington Md.
B.S. 1952, Stanford University Calif.
Tucker, Thomas Oaen Md.

Tucker, William Clarke Va.
Tucker, Yvonne R. D.C.
Tudor, Walter John Ill.
B.S. 1951, University of Illinois
M.S. 1952, University of Wisconsin
Tull, Lawrence Emerson Ohio
C.E. 1926, University of Cincinnati
Tuller, Gertrude Owen Va.
Tulloss, Williams Waring, Jr Md.
A.B. 1947, Temple University
M.S. 1951, The George Washington University
Tunnell, Lenore M Texas
A.B. 1934, A.M. 1943, Texas Technological College
Tuohey, Conrad Grenier Va.
Tupper, Genevieve Frances D.C.
Tura, James Vincent Ohio
B.S. 1952, Ohio University
Turan, Edward Vincent R.I.
Turnbow, Lee Mildal Ala.
Turbes, Robert Lee Mass.
Turnage, Marilyn Ark.
Turner, Ada Geraldine D.C.
Turner, Asta D.C.
Diploma 1942, Tartu University, Estonia
Turner, Edward Clarence Md.
B.S. 1943, University of Maryland
A.M. in Ed. 1949, The George Washington University
Turner, Elizabeth Caroline Va.
Turner, Hiram Claude Ga.
B.S. 1928, Stetson University
Turner, John Owen Md.
Turner, Mary Johnston D.C.
A.B. 1951, The George Washington University
Turner, Mary Nicholas Va.
A.B. 1951, University of Richmond
Turner, Mildred Gray D.C.
A.B. 1951, Mississippi State College for Women
Turner, Roger Wickersham D.C.
Turner, Sarah Seymour D.C.
Turner, Seymour Jones D.C.
Turner, William Herman La.
B.S. in E.E. 1951, Tulane University
Turnquest, George Md.
Turnquist, Esther Alice N.Y.
A.B. 1944, Keuka College
M.P.A. 1951, Syracuse University
Turnure, Sarah Jane Cowell D.C.
A.B. 1943, William Teachers College
Turpeau, Isaac Joseph Md.
B.E.E. 1950, College of the City of New York
Tuteja, Lakshman Dass India
A.B. 1951, Panjab University, Delhi, India
Tuttle, Joe N.Y.
B.S. 1951, University of Missouri
Tuttle, Ralph Courtney Md.
B.S. in C.E. 1916, University of Washington
Twaddell, William Moore Va.
A.B. 1921, Harvard University
Tyler, Sarah W Md.
Tyler, Arthur Folwell Va.
Tyler, Gustave Grant Calif.
A.B. 1944, University of California at Los Angeles
Tyler, James Chase D.C.

Tyler, William, Jr. D.C.
Tym, Michael, Jr. Ill.
Tyser, Russell Thomas Va.
Tyson, Nancy Elizabeth D.C.

U

Udry, William Robert Ohio
A.B. 1953, University of Cincinnati
Uhl, John Phillip Va.
Ulmer, Richard Eugene Va.
Ulrich, Otto Herman, Jr. Va.
Ulrich, Ellen Mary Md.
Ulsamer, Marjorie Elsene Vt.
A.B. 1945, University of Arizona
Ulsfeldt, Benny Eduard D.C.
Ulsheimer, Clarence Benton Va.
Umbel, Richard Port Md.
B.S. 1943, Bethany College
B.S. 1946, U. S. Naval Academy
Umstead, Walter Williams N.C.
A.B. 1951, University of North Carolina
Underhill, Barbara Ann D.C.
Underwood, Paula Lora D.C.
Unger, Judith D.C.
Ungenholtz, Willard Clifton Md.
B.M.E. 1948, College of the City of New York
M.S. 1955, Rensselaer Polytechnic Institute
Upshaw, Jay Edward, Jr. D.C.
Upshaw, Robert Lee Nebr.
Upshaw, Terry Jean Calif.
Upton, Kenneth Lee Mo.
A.B. 1948, Westminster College
D.D.S. 1952, St. Louis University
Urbano, Remo D.C.
Urbrock, David Frank Va.
Urgo, David Allan Md.
Urgo, George Hans N.Y.
Urquhart, Howard Jackson Ill.
Usilton, Ray Roy Md.
Ustun, Semih Aydemir Va.
Utsey, Clarence Marion Md.
Uyehara, Geoffrey Umio D.C.

V

Vadnais, Henry Alvin, Jr. Conn.
A.B. 1951, Holy Cross College
A.M. 1952, Boston College
Vagnot, Robert Daniel Pa.
Vagts, August Henry Va.
Valmoney, George Varkies Va.
B.S. 1953, M.S. 1955, The George Washington University
Valentine, Peter Marion D.C.
Vail, Benjamin Anthony Va.
A.B. 1940, West Liberty State College
A.M. 1952, The George Washington University
Vail, Carl Joseph, Jr. Texas
B.S. 1951, University of Alabama
Vail, Thomas L. C. Va.
Vaile, John Rudolph Pa.
Vain, Dewayne Lamar Va.
Vaile, Patricia Muir Fla.
B.S. 1938, Madison College
A.M. 1940, University of Chicago
Valton, George William Va.
A.B. 1951, College of William and Mary
Valenzuela, Nicanor Gonzales Philippines
Valkovic, Hugh Joseph Pa.
Valente, Frances Luciano Md.
Valenti, Josephine Carmela D.C.
Valentino, Zena Nunzia D.C.
A.B. 1940, Louisiana State University
Valge, Ado D.C.
Valge, Juri Calif.
Vallandingham, Carl Edwin Va.
Valverde, Katharine E. Webster D.C.
A.B. 1948, Grinnell College
Van Ackeren, Barbara Kirsten Md.
Van Blarcom, Shirley Rae Mo.
A.B. 1951, Mt. Holyoke College
Van Briggle, Robert Dallas Md.
A.B. 1949, The George Washington University
Van Buren, John Miller
A.B. 1943, Dartmouth College
M.D. 1947, Columbia University
M.S. 1950, McGill University
Van Buskirk, Ralph Raymond Va.
A.B. 1943, Westminster Missionary College
Van Camp, James William
Vance, Joan Christensen Va.
A.B. 1955, Radcliffe College D.C.
Vance, William Clayton Calif.
Van Cleve, Lawrence Lester Md.
Van De Carr, Lawrence Rene
Van Deusen, John Ten Eyck Md.
A.B. 1948, Brown University Pa.
Van Deventer, Philip, Jr. Va.
Vandewart, Robert Charles
Vande Vrede, Robert George
B.Ch.E. 1941, Newark College of Engineering N.J.
M.Ch.E. 1951, Rensselaer Polytechnic Institute Va.
Van Etten, George Douglas
Van Every, David Berl
A.B. 1955, University of California at Los Angeles D.C. N.Y.
Van Fleet, William Vernon
Van Gorden, John Hanford, Jr. D.C.
A.B. 1950, Syracuse University N.Y.
Van Handenhove, Roger L.
Van Hise, Louise Marie Md. Ohio
A.B. 1949, Hood College
Van Horn, Robert Means
Van Huffel, Phillip Louis Md. Md.
B.S. 1954, Notre Dame University
Van Mater, Blinn D.C.
Van Metre, Merle
B.S. 1925, U. S. Naval Academy
Van Norman, Royce Wayland, Jr.
B.S. 1950, Wilson Teachers College Va.
A.M. 1953, Catholic University of America Va. Va.
Van Nostrand, Elbert Hugh
Vannoy, Richard Nash
Van Riswick, Guy Everett Va.
A.B. 1950, A.M. 1951, The George Washington University Md.
Van Sickle, Stuart Wheeler
B.S. 1955, Purdue University Va.
Van Sickle, Leona Mildred
B.S.Ed. 1951, West Virginia University Md.
Van Swearingen, Earl Kendall Kans.
B.S. 1927, U. S. Naval Academy Va.
Van Trump, Beverly Jo
Van Tuyl, Henry Edward
A.B. 1952, University of Kansas
Van Valkenburgh, Robert A.

Van We, Francis Ogden
Van Winkle, Garry Gilbert Md
Vanhathan, Anne Porter D.C.
Varela, Federico Guillermo D.C.
Vargasko, Andrew John, Jr. Bolivia
B.S. 1951, University of Maryland Conn.
M.S. 1953, The George Washington University
Vargasko, Andre Prowell
A.B. 1951, University of Maryland D.C.
Vates, Orville Wray
Vates, Thomas Grant Pa.
Vatmaugher, Joe Franklin Pa.
Vatson, Jessie George S.C.
Vatt, Michael D.C.
Vazquez, Frank Rae Va.
Vebb, John Charles Va.
B.S. in C.E. 1952, Carnegie Institute of Technology Ohio
Vetta, Bruno Montreale
B.S. 1954, Georgetown University D.C.
Veyman, David Hill
A.B. 1954, Hamilton College N.Y.
Veyman, Donald Keith
B.S. in M.E. 1951, Tri State College D.C.
Veyrauch, Elizabeth Lucille
A.B. 1945, University of California Ala.
Veyrauch, Joseph Argenti Calif.
A.B. 1954, A.M. 1955, The George Washington University Mexico
Veyrauch, Mary I.
Veyrauch, Robert George D.C.
B.S. 1951, University of Maryland Md.
Veyrauch, Robert Nash
Veyrauch, Vladimir R. D.C.
Veysel, Warren Frederick D.C.
Vezquez, Alberto Wenceslao Va.
Vezquez, Jose Benedicto Va.
B.S. 1952, Muskingum College Puerto Rico
Vezzi, H. Cary
Vhite, Russell Rands D.C.
B.S. 1951, American University Norway
Vhitney, Mary Palmer
A.B. 1945, Lincoln Memorial University D.C.
A.M. 1947, The George Washington University
Vhitteker, Lee
Vhy, Richard Wolf
Vhyte, David G. D.C.
A.B. 1951, Polytechnic Institute of Puerto Rico Pa.
Vhyte, Mary Mildred Fla.
A.B. 1951, University of Belgrade
A.M. 1953, Harvard University Mass.
Vickline, Joseph
A.B. 1938, New Jersey State Teachers College N.J.
Vicks, George Mercer
Vicks, Mary Lou Lawrence
Vicks, Lewis Crawford
Vicks, Lewis Edward Md.
A.B. 1951, North Carolina University Md.
Vicks, Thomas Bennett, Jr.
A.B. 1948, Duke University D.C.
Vicks, Wade Hampton, III
B.S. 1948, M.D. Cornell
Vicks, Jean
Vicks, Lawrence Va.
B.S. Georgetown Dental D.C.
Vicks, Mary Va.
B.S. in C.E. 1952, West Virginia D.C.
Vidmayer, Theodore Robert
B.C. 1951, University of Maryland Md.
Vidmayer, Don Manuel D.C.

Vierton, Joan Katherine Md.
Vierlent, Marilee Joyce N.Y.
Vierpier, Gerald Wallace N.Y.
Vierpier, Mallard James N.Y.
Vierpier, Edward Nelson Md.
Vierpier, George Bentley, Jr. D.C.
B.S. 1951, University of Virginia
Vierpier, Gerald Stanley Va.
A.B. 1949, A.M. 1950, University of Virginia
Vierpier, Tempe T. D.C.
Vierpier, Edgar Dudley, Jr. Va.
B.S. 1951, U.S. Naval Academy
Vierpier, Fred William, Jr. Wis.
Vierpier, Philip William Va.
A.B. 1948, M.S. 1948, University of Massachusetts
Vierpier, John Williams, Jr. Va.
B.S. 1952, A.M. 1953, University of Virginia
Vibbard, Warren John Md.
A.B. 1949, Hobart College
Vicente, Maria Argentina
Vidlak, George D.C.
B.S. in C.E. 1948, Armour Institute of Technology
Vielmann, Evelyn Hoffman Va.
A.B. 1949, University of Illinois
Vieser, Barbara Nanette Pa.
Vigfield, Helen Anne D.C.
A.B. 1951, The George Washington University
Vila, Rafael's Margarita D.C.
Vilcomb, James Victor N.Y.
A.B. 1950, University of Wisconsin
Vilcox, Richard Jamestown Board
Vilder, Sandra Lee Va.
Vilkinson, Arthur Thailand
LL.M. 1952, Dickinson University
Vilkes, Edie Lamar Va.
Vilkinson, Standley Charles Va.
Vilkinson, Janet Reed Va.
Vilkins, Thomas Hayes N.Y.
Vilkinson, Thomas Rose Ohio
Vilmoth, Peter F. Va.
B.S. 1950, Davis and Elkins College
Vilsman, Joseph D.C.
LL.B. 1948, University of Illinois
Vilson, Florence Judge D.C.
Vinder, James Lee D.C.
Vinebrenner, Mona Elizabeth D.C.
A.B. 1951, Pembroke College
Vingfield, Edie L. Va.
Vinter von Vogelsteen, Cornelius Roediger Penn D.C.
B.S. in Phar. 1947, University of Louisville
Voge, Walter Franklin Va.
B.S. 1951, Davis College
Wilkins, Lucille
Wolfand, Robert Joseph D.C.
Wonderlin, Edwin Wilhelm Md.
A.B. 1948, Williams College D.C.
Wan Cleave, Jeanne Jane
Wandenberg, Ann Frances Md.
Wan Pleasant, Audrey Estelle Md.
Wan Sweringen, Ewell Thomas Md.
A.B. 1949, American University Fla.
Wan Wald, Mary Barbara
A.B. 1948, College of St. Catherine S.D.
A.M. 1950, Catholic University of America
Wanda, Barbara Marjorie D.C.

Voss, Gilbert Lincoln — Fla.
B.S. 1951, M.S. 1952, University of Miami
Vossough, Ahmed — Iran
Vossough, Maryam — Iran
Vryonis, Sophie — Tenn.
Vryonis, Speros — Tenn.
A.B. 1950, Southwestern at Memphis
A.M. 1952, Harvard University
Vu, Hau Ngoc — D.C.
Vujovic, Dejan — Yugoslavia
Vukolich, Vianja — D.C.
Vycital, Winifred Ann — D.C.

W

Waddell, Olive Pauline — Va.
A.B. 1951, A.M. 1953, University of Pittsburgh
Wade, Clarence, Jr. — Va.
B.S. 1952, Wilson Teachers College
Wade, Dorothy A. — Nebr.
Wade, Elizabeth Elaine — Kans.
Wade, Elizabeth Jean — D.C.
B.S. 1944, University of Virginia
Wade, Ewell Gene — Utah
B.S. 1953, Brigham Young University
Wade, Margaret — Mass.
Wade, Richard Rudolph — Va.
A.B. 1948, A.M. 1950, The George Washington University
Wade, Ronald Ralph, Jr. — Ohio
B.S. 1955, University of Michigan
Wadleigh, John Russell — D.C.
Wagener, Linda Anne — D.C.
Waggaman, Thomas Ennalls III — D.C.
Wagner, Barbara Ann — Mass.
Wagner, Cloyd William — Pa.
Wagner, Harvey Eli — D.C.
Wagner, Holly Clyde — Md.
A.B. 1941, A.M. 1947, University of California at Los Angeles
Wagner, Hugh Edward, Jr. — Md.
B.S. 1952, Johns Hopkins University
Wagner, James Henry — Pa.
Wagner, Lawrence Reginald — D.C.
Wagner, Miriam — D.C.
Wagner, Sarah Elizabeth — D.C.
Wagner, William Lee — Va.
Wagnon, Margene — Va.
Waid, McTurner — Va.
A.B. 1951, Lynchburg College
Wain, Khin Khin — Burma
A.B. 1952, University of Rangoon
Wait, Lovena Campbell — D.C.
Wakabayashi, Shigeru — Japan
B.S. 1952, Trinity University
Walburg, Jean Elaine — D.C.
Walcott, Arlene Winfield — D.C.
B.S. 1954, Wilson Teachers College
Walden, Kenneth Edward — Kans.
B.S. in M.E. 1950, University of Arkansas
LL.B. 1955, University of Kansas City
Walden, Mary Saunders — D.C.
A.B. 1950, The George Washington University
Waldman, Eric — Wis.
A.B. 1950, A.M. 1951, The George Washington University
Waldman, Morton Bertram — N.J.
A.B. 1954, Lafayette College
Waldman, Norma Marcia — D.C.
Waldron, David Louis — D.C.
Waldron, Mattie Alice — Va.
Waldron, Susan Lee — N.J.
Waldstein, Lucette — D.C.
A.B. 1926, Washington University
Walinsky, Edward Pilus — Va.
Walker, Adolphus Leroy — D.C.
B.S. 1951, Virginia State College
Walker, Charles Hamlin — Va.
B.S. 1951, University of Utah
Walker, Curtis Leroy — Va.
B.S. in M.E. 1950, University of Oklahoma
Walker, D. Marlene — W.Va.
Walker, Dallas R. — Va.
B.S. 1951, West Virginia University
Walker, Edward Fletcher, Jr. — Md.
Walker, Ernest Carroll — Va.
Walker, Eunice Miriam — Ala.
A.B. 1941, University of Arkansas
Walker, Hal Tabb — Va.
B.S. in B.I.E. 1949, University of Alabama
Walker, Howard Seward — D.C.
Walker, James Dent — N.C.
Walker, James Franklin — Pa.
B.S. 1949, Hampton Institute
Walker, John Jennings — D.C.
Walker, John William — Va.
Walker, Mabel Marie — N.C.
Walker, Nancy Anne — Va.
A.B. 1955, University of North Carolina
Walker, Norma Lorraine — Md.
Walker, Olie Hoosman — D.C.
B.S. 1942, Maryland State Teachers College, Salisbury
Walker, Raymond Francis — Va.
Walker, Richard Malcolm — Penn.
Walker, Robert Williams — Va.
B.S. 1950, U. S. Naval Academy
Walker, Sara Hope — Fla.
Walker, Sidney Joseph — D.C.
B.S. 1942, Berea College
LL.B. 1949, University of Miami
Walker, Suzanne Wickham — Ohio
Walkwell, Charles Stanley — Md.
Wall, Conrad Grey — Texas
Wall, Eulalia Louise — Va.
A.B. 1927, Southern Methodist University
Wall, Lynn Allen — Md.
Wallace, Bradley Nelson — Md.
Wallace, Elizabeth Ann — Va.
Wallace, Elma Hayes — D.C.
Wallace, George Cadwallader — D.C.
A.B. 1951, University of Pittsburgh
Wallace, John Berry — Utah
B.S. 1948, Georgetown University
Wallace, John Wallace — Fla.
A.B. 1952, University of Utah
A.M. 1955, The George Washington University
Wallace, Samuel Delmar — Miss.
Waller, Ernest — D.C.
A.B. 1950, Howard University
Waller, Frederic Elton — Md.
A.B. 1952, The George Washington University
Waller, John Robert — Md.
B.S. 1953, Georgetown University
Waller, Mary Trimble — Ky.
Waller, William McClure — D.C.
A.B. 1951, Berea College
M.Ed. 1952, University of Kentucky
Walles, Robert John — Ill.
B.S. 1952, Bradley University

Wallis, Rodman William Pa.
A.B. 1954, The George Washington University

Walls, Ethel Tolson Md.
A.B. 1939, Clark University

Walsh, Joan Conn.
A.B. 1950, Bennington College

Walsh, Aylward Jerome N.J.
A.B. 1952, The George Washington University

Walton, Stanley Okla.

Walton, Cornelius Francis Mass.

Ward, Franklin Joseph D.C.
B.S. 1946, Ed.M. 1951, Boston University

Ward, John Patrick Va.
B.S. Ed. 1939, New York State College for Teachers
M.S. Ed. 1947, Cornell University

Ward, Joseph Patrick
B.E.E. 1953, Manhattan College

Ward, Roy Michael Va.

Ward, William Richard Va.

Ware, Dorothy Elizabeth D.C.
A.B. 1947, University of California at Los Angeles
A.M. 1950, University of Iowa

Ware, Charles William
B.S. 1953, Georgetown University

Ware, Clare Christie D.C.

Ware, Florence Helen Va.
B.S. 1949, University of Pittsburgh

Ware, Jacqueline Ann D.C.
A.B. 1955, Western Maryland College

Ware, John Helmer Md.

Ware, Thomas Williams, Jr. Va.
A.B. 1942, The George Washington University

Waters, Frank John Md.

Waters, Mervin Paul
B.S. & M.E. 1942, Lehigh University

Waters, Thomas Lee D.C.

Waters, David Bryant Va.

Waters, Douglas MacFarlane Md.
A.B. 1954, Occidental College

Waters, John Foster Md.

Watson, Thomas William, Jr. Calif.
A.B. 1942, The George Washington University

Watt, John Eldridge Va.
B.S. 1951, University of California

Watworth, Kathleen Ann Md.
A.B. 1954, The George Washington University

Wampler, Galen Warren Calif.

Wanamaker, William Charles D.C.

Wantland, Vera D.C.

Ward, Alan Alexander Okla.

Ward, Albert Wayne D.C.
B.E.E. 1950, Swarthmore College

Ward, Annette Cooper Va.
A.B. 1950, University of Georgia

Ward, Cary Gravatt Va.
A.B. 1954, West Virginia University

Ward, Freda Marie D.C.

Ward, Freda Gower Md.

Ward, James Parker D.C.
A.B. 1954, Southern Illinois University

Ward, Joseph Leo Ill.
B.S. 1950, University of Nebraska

Ward, Marie Lorell D.C.
A.B. 1950, University of Nevada

Ward, Mary Rosalie Nev.

Ward, Robert Wilson D.C.
B.S. 1954, Wilson Teachers College

Ward, Roland Joseph Md.

Ward, Shirley Ann D.C.
A.B. 1951, University of Maryland

Ward, Shirley Anne D.C.
A.B. 1954, University of Richmond

Ward, Virginia Farmer D.C.

Ward, William Charles Va.
B.S. 1948, Pennsylvania State Teachers College, Shippensburg

Ward, William Charles Va.
B.S. 1951, University of Virginia

Warde, Edith Merrill D.C.

Warden, Ernest Albert Kans.
A.B. 1925, Municipal University of Wichita

Wardman, Schuyler Clark Va.

Wardwell, Mary Spargo D.C.

Ware, Herbert Withers Va.

Ware, Virginia Evelyn D.C.

Warfield, Richard Myers Md.
A.B. 1948, The George Washington University

Warhurst, Winifred Minn.

Waring, Jeanne Parker D.C.
A.B. 1948, University of Richmond

Warner, Charles Thurman, Jr. D.C.

Warner, Eleanor Elizabeth D.C.

Warner, Mary Minnie Md.
A.B. 1944, Westhampton College

Warner, Payne, Jr. D.C.

Warren, Richard Allen Md.

Warren, Elton Matthew Va.

Warren, Frank Randall Va.

Warren, Glenn Va.

Warren, Margaretta Elizabeth D.C.
A.B. 1954, The George Washington University

Warren, Mary Perry Md.
A.B. 1935, Agnes Scott College

Warren, Virginia Caroline D.C.

Warren, Louis Freeland, Jr. Md.
A.B. 1954, The George Washington University

Warrenburg, Lenert Harvey D.C.

Warrington, Leonard D.C.

Washburn, William Victor D.C.

Wash, Barbara Jean Va.

Washburn, Albert Brooks, Jr. Va.
A.B. 1950, Dartmouth College

Washington, Gloria Georgina D.C.
B.S. 1949, Miner Teachers College

Washington, Irene Nathaniel D.C.
A.B. 1948, Oakwood College

Washington, Ornella Texas
B.S. 1949, Willamette University

Washington, Raymond Lee Md.

Washington, Zenobia D.C.
B.S. 1954, Miner Teachers College

Wasserman, Donald Edward Va.

Wasserman, Max Judd, Jr. D.C.

Waterman, Guy Van Vleet D.C.
A.B. 1944, The George Washington University

Waterman, Henry Alan D.C.

Waters, Lucella Nantz Md.

Waters, Mildred Louise Va.

Waterval, Kate Reinhold Va.

Watkins, Henry Lancaster D.C.

Watkins, Paul Anderson Md.

Watkins, Clarence Rilles Md.

Watkins, Harold Stanley — Md.
Watkins, Linda Jane — Md.
A.B. 1954, Drake University
Watkins, Roger Reed — D.C.
B.S. 1950, Pennsylvania State University
Watkins, Rose Stone — Va.
A.B. 1947, The George Washington University
Watkins, William T. — Va.
A.B. 1950, The George Washington University
Watson, Blanche Lewis — Ind.
A.B. 1933, The George Washington University
Watson, Dorothy Minter — Ga.
Watson, Frances Lamar — D.C.
A.B. [illegible], Wofford College
LL.B. 1948, University of Georgia
Watson, Gerald LeRoy — Va.
A.B. 1942, The George Washington University
Watson, Grace Lee — Md.
Watson, Lucille Laird — N.C.
Watson, Mildred Stewart — Va.
Watson, Thomas Gilbert, Jr. — Md.
B.S. 1954, University of Maryland
Watts, Althea Lavender — Va.
Watts, Charles William — Va.
Watts, William Pinkney — Pa.
A.B. 1942, Miami University
Waymouth, Lucius Marion, Jr. — Va.
A.B. 1938, The George Washington University
Weaver, Caroline Lydia — Maine
A.B. 1949, A.M. 1950, The George Washington University
Way, Alice Elmore — Md.
B.S. 1953, University of Maryland
Wix, Virginia Vollmer — Md.
Wayne, Arlene F. — N.Y.
A.B. 1953, Brooklyn College
Weatherall, Polly Ann — D.C.
Weakley, William Vernon — Md.
Weatherhead, Kathleen Patricia — Bahamas
A.B. 1953, The George Washington University
Weathers, Melodee Wagner — Ga.
A.B. 1949, The George Washington University
Weaver, David Lawrence — D.C.
Weaver, Dorothy Mae — D.C.
A.B. 1935, Reed College
A.M. 1942, Mills College
Weaver, Joan — Mich.
A.B. 1955, Michigan State University
Weaver, June Wilhelm — Kans.
Weaver, June Virginia — Va.
A.B. 1953, The George Washington University
Weaver, Mortimer Kaye — Md.
Weaver, William Milton — Md.
Weaver, William Wallace — D.C.
Webb, Dora Parsons — Md.
B.S. 1950, Morgan State College
A.M. 1954, Columbia University
Webb, Jerome Yates III — Md.
Webb, Harold — N.Y.
B.S. 1953, University of Alabama
Webb, James Irwin — N.J.
B.S. in M.E. 1953, Northwestern University
Webb, Lois Needham — Va.
Webb, Ronald Lessner — N.C.
Webb, Wilma Pendleton — [illegible]
B.S. 1954, Catawba College — D.C.
Webb, William Thayer, Jr. — [illegible]
B.S. 1952, Wilson Teachers College — Md.
Weber, Arnold Felder — [illegible]
B.S. in B.A. 1949, Marquette University
A.M. 1950, Harvard University
LL.B. 1954, The George Washington University
Weber, Charles Austin, Jr. — [illegible]
Weber, Elizabeth Lyon — [illegible]
Weber, Gerald Eugene — [illegible]
Weber, Joseph H. — [illegible]
B.E.E. 1932, Rensselaer Polytechnic Institute — [illegible]
Webster, Annette Patricia — [illegible]
B.S. in Ed. 1943, Cliffordian State Teachers College — [illegible]
Webster, Jean Clyde — [illegible]
Webster, Robert Oswald — [illegible]
B.M.E. 1947, Ohio State University — [illegible]
Weddle, Robert Lawrason — [illegible]
Weed, Cynthia Gates — [illegible]
A.B. 1946, A.M. 1949, Northwestern University — [illegible]
Weeks, Gisela Margaret — [illegible]
Weidemeyer, Lela Mae — [illegible]
A.B. in Ed. 1937, A.B. 1954, The George Washington University — [illegible]
Weeks, Ann Reeves — [illegible]
A.B. 1954, The George Washington University — [illegible]
Weeks, Christopher — [illegible]
B.S. 1941, Yale University — [illegible]
Weeks, James Howard — [illegible]
Weeks, James Hubbard — [illegible]
B.S. 1950, University of Massachusetts — [illegible]
Weeks, Sarah Hunnet — [illegible]
Weems, M. Jane — [illegible]
A.B. 1954, University of Vermont — [illegible]
Welch, Harold E. — [illegible]
A.B. 1950, University of New Mexico — [illegible]
Welch, Lester H. — [illegible]
Welke, Theodore John — [illegible]
A.B. 1954, Ripon University — [illegible]
Wellemeyer, George Gregory — [illegible]
B.S. 1948, Virginia Polytechnic Institute — [illegible]
Wellington, Harold Ross — [illegible]
A.B. 1941, Syracuse University — [illegible]
Wells, Marguerite Mary — [illegible]
Wellsburg, Michelle E. — [illegible]
A.B. 1954, Hunter College — [illegible]
A.M. 1955, New York University — [illegible]
Wentzel, David Joseph — [illegible]
B.S. 1950, Lawrence College — [illegible]
Wendland, Robert Joseph — [illegible]
Wendberg, Dawn Lee — [illegible]
Wenner, Frank — [illegible]
A.B. 1953, Campbell University — [illegible]
Wenner, Jacob Mercer — [illegible]
Wenner, Sidney — [illegible]
B.S. 1949, College of the City of New York — [illegible]
M.S. 1950, New York University — [illegible]
Wenner, Walter — [illegible]
Wennerstrom, Harmon — [illegible]
A.B. 1941, The George Washington University — [illegible]

Weigand, Richard Herbert Md.
B.S. [illegible], The George Washington University
Weinrich, Anna Levin
Weinstein, Ina D.C.
B.S. [illegible], Roosevelt University Va.
M.S. [illegible], University of Illinois
Weinstein, Louis
B.E.E. [illegible], University of Pennsylvania D.C.
Weintraub, Paul Harold
B.S. [illegible], Washington and Lee University D.C.
Weinzierl, Robert Earl
A.B. [illegible], The George Washington University D.C.
Weisberg, Samuel
Weisenfeld, Stephen Peter D.C.
A.B. [illegible], American University Md.
Weis, Evelyn Clarice
A.B. [illegible], American University Md.
Weis, Raymond Edward, Jr.
B.M.E. [illegible], Catholic University of America Md.
Weis, Rebecca Mildred
Weiss, Myron Aron D.C.
Weiss, Paul Edgar Md.
A.B. [illegible], The George Washington University Md.
Weissenborn, LeRoy Peter
Weiss, Barbara May Md.
Weiss, Leonard Lester D.C.
B.S. [illegible], M.S. [illegible], The George Washington University Md.
Weiss, Carol Henry
Weiss, Eric
Weiss, Wayne Mallmore Md.
A.B. [illegible], Indiana University Va.
Weiss, Lawrence Howard Va.
Weiss, Alan H.
Weiss, Leonard Adam Wis.
E.M.E. [illegible], Cornell University Va.
Weiss, Celine Aurelia D.C.
Weiss, Herbert
B.S. [illegible], College of the City of New York D.C.
M.S. [illegible], The George Washington University Md.
Weiss, Leo William
Weiss, Theodore
Weiss, William Hartman N.Y.
Weiss, Herbert D.C.
B.S. [illegible], College of the City of New York D.C.
M.S. [illegible], The George Washington University Md.
Weissinger, Paul
B.S. [illegible], Rutgers University N.J.
Weissmann, Hans George
Leadership, Georgia Institute of Technology Va.
J.D. [illegible], Emory University
Weisskopf, Richard Jordan
Weiss, George D.C.
A.B. [illegible], New York University D.C.
Weiss, Fred Wendell D.C.
Weiss, Mary Callen
A.B. [illegible], The George Washington University Va.
Weiss, Herman Kerr D.C.
A.B. [illegible], University of Oklahoma Okla.
A.M. [illegible], University of California

Welch, Paul House D.C.
Welker, George Herbert Calif.
B.S. [illegible], U.S. Coast Guard Academy
Welkowitz, Percez Va.
A.B. [illegible], The George Washington University
Wellington, Geraldine Louise D.C.
Wellington, Richard Leslie N.Y.
Wells, Ammeron M. D.C.
Wells, Rosalind Ga.
A.B. [illegible], Millsaps College
Wells, Charles Ray Va.
Wells, Hal Chambers, Jr. Va.
Wells, Jean Adair D.C.
A.B. [illegible], New Jersey College for Women
M.S. [illegible], Cornell University
Wells, Jane D.C.
Wells, Marcia William Md.
B.S. [illegible], University of Miami
Wells, Nyra D.C.
Wells, Robert Oscar, Jr. D.C.
A.B. [illegible], The George Washington University
Welsh, Ruth Elizabeth Md.
B.S. [illegible], University of Illinois
Welsh, William Henry Md.
Wenner, Barnwell Talbott Md.
A.B. [illegible], Duke University
LL.B. [illegible], University of Maryland
Wentz, Irma Albert D.C.
Wentz, Mary Kathleen Va.
Wentzel, Fred Gardiner W.Va.
A.B. [illegible], Shepherd State College
A.M. [illegible], The George Washington University
Wenzel, Eleanor Ruth Ill.
B.S. [illegible], University of Illinois
Wenzell, Elizabeth Mary Pa.
Werden, Constance Schwartz D.C.
Werner, William Moultrie Va.
B.F.A. [illegible], University of Miami
Werner, William Rodgers Calif.
B.S. in M.E., A.E. [illegible], University of Washington
Wertz, Sally Markham, Jr. Va.
Wertzner, Frederick Ellis D.C.
Wesley, Harriet Thomason, Jr. Va.
A.B. [illegible], Judson College
Wesley, William Richard, Jr. Miss.
Wessinger, Margit Lidder Mass.
B.S. [illegible], University of Massachusetts
Wessling, Farrell Ray Md.
B.S. [illegible], The George Washington University
Westcott, Robert Mercer, Jr. D.C.
Wescott, Marcia May D.C.
B.S. [illegible], A.M. [illegible], Columbia University
Westcott, Cecil, Jr. Va.
Westcott, Emmanuel Mortash Va.
Westcott, Lillian Hebert D.C.
A.B. [illegible], University of Miami
Westcott, James Linda Conn.
West, Emma J. D.C.
West, David Jerome D.C.
West, Delbert Jasper Ohio
A.B. [illegible], Wilmington College
West, Gerald Christian W.Va.
West, Elmer Paul Md.
West, Stanley Ray Va.
B.S. in F.S. [illegible], Georgetown University

West, George Richard Md.
West, Hind K. Md.
B.S. 1949, McGill University
West, Irene B. Va.
B.S.Ed. 1949, University of Alabama
West, LaVerne Gregory Va.
A.B. 1926, Western Reserve University
A.M. 1942, Catholic University of America
West, Norman Ariel Va.
A.B. 1949, University of Richmond
LL.B. 1953, The George Washington University
West, Ronald David D.C.
West, Sharlie Margery D.C.
West, Stephen Kingsbury Mass.
A.B. 1950, Yale University
LL.B. 1953, Harvard University
West, Sylvia Jane D.C.
Westbrook, Robert Joseph D.C.
Westbrook, William Hughes Va.
A.B. 1952, The George Washington University
Westenbarger, Robert Joseph Ohio
B.S. 1952, University of Dayton
Westermann, Evan Davies N.Y.
A.B. 1939, Harvard University
Westlake, Carolyn Anna D.C.
Westlake, William Arthur Va.
Westmoreland, Ann Hayes Va.
B.S. 1952, Central Missouri State Teachers College
Weston, Alfred Ewart Va.
B.S. & E.E. 1954, Ohio University
Wetmore, George Charles Md.
Weyburg, Ruth Helen D.C.
Weyler, Homa Md.
A.B. 1916, New York University
A.M. 1942, The George Washington University
Whale, Arthur Richard Va.
B.S. in Ch.E. 1935, Northwestern University
Wharton, Helen Cooley Brown D.C.
A.B. 1955, The George Washington University
Wheatley, Robert Leon D.C.
Wheeler, Carlos Victor Va.
B.S. in M.E. 1951, Case Institute of Technology
Wheeler, Carroll Earl Md.
Wheeler, Elizabeth Darner Va.
B.F.A. 1951, Western Reserve University
Wheeler, Jacqueline Marie D.C.
Wheeler, Jerry Lee Va.
Wheeler, Joan Clare Mass.
A.B. 1946, Bennington College
A.M. 1952, University of Southern California
Wheeler, John Dixon, Jr. Va.
Wheeler, Phillip Reed Va.
B.S. in E.E. 1950, University of Vermont
Wheeler, Larry Myron Ga.
B.F.A. 1954, University of Georgia
Wheeler, Ray Sisler Texas
B.S. 1950, Southwest State Teachers College
Wheeler, Richard Allen D.C.
A.B. 1951, Yale University
Wheeler, Rosetta Reilly N.C.
B.S. 1942, Iowa State College
Wheeley, Carl Reed D.C.
Wheeling, Joan Hartley D.C.
Wheeton, Harry Thomas D.C.
Whilden, Walter Homa, Jr. Ark.
Whitbeck, Carl Simpson
B.S. 1940, A.M. 1951, University of Arkansas Pa.
Whipple, Elden Cole, Jr.
B.S. 1953, Wheaton College Calif.
Whitaker, George Henry, Jr. D.C.
B.S. 1942, U. S. Naval Academy
Whitaker, Helen Dent
B.S. 1951, George Peabody College for Teachers Va.
Whittier, Marcia Dianne Nebr.
White, Albert
LL.B. 1949, The George Washington University Ark.
White, Blackman Lee
B.S. 1954, Texas Technological College Conn.
White, Bruce A. W.Va.
White, Charles Robert D.C.
White, Daniel Marvin D.C.
White, Donald Nelson Va.
White, Eli Edward Md.
White, Ernest Leroy W.Va.
White, Frances Lanier
A.B. 1945, The George Washington University Va.
White, Frances Rachel Parker Md.
White, George Erhardt
A.B. 1924, The George Washington University D.C.
White, James Coley Ill.
White, James Gordon Va.
White, John Leslie
A.B. 1948, M.S. 1949, Kalamazoo College Va.
White, Joseph Hill III
A.B. 1949, American University
LL.B. 1951, The George Washington University Md.
White, Julius George D.C.
White, Leonard Allen D.C.
White, Margaret Ruth Ala.
White, Patrick Thomas
B.S. 1948, Georgetown University D.C.
White, Peter Colin D.C.
White, Richard Andrew
A.B. 1954, Clark University Mass.
White, Robert Alvin
White, Robert Francis
B.S. in Ch.E. 1951, Northeastern University Md.
White, Robert Lewis Va.
White, Robert McKay
B.S. 1950, Albright College Va.
White, Robert Milton
A.B. 1954, The George Washington University Va.
White, Rudy Clymer Va.
White, Thomas Vernon
Whitehurst, Mary Quarles D.C.
A.B. 1951, College of William and Mary D.C.
Whitenight, Daniel Newton
Whitesides, Lenora Nance D.C.
A.B. 1942, Spelman College
Whitley, Cleo Monroe
B.S. 1950, Agricultural and Technical College of North Carolina D.C.
Whitlock, Jerry Dean D.C.
Whitman, Bessie D

Whatman, Mildred Wilkinson — Ga.
B.S. 1946, Howard College
Wheatmore, Ada Mae — Va.
Wheatmore, Eileen Christine — Md.
A.B. in Ed. 1948, Mary Washington University
Whatmore, Verl Deloyd
Wheatley, Alden W — Ohio
B.S. 1941, U. S. Naval Academy — Ind.
Wheatley, Inez Schneider — Va.
A.B. 1929, Southwestern Institute of Technology
A.M. 1946, The George Washington University
Whitney, Lester Agnew
A.B. 1938, Columbia University — D.C.
Whitsett, Virginia Marie
Whittaker, John Lewis — Va.
Whittemore, Jane Ann — D.C.
Whittemore, Joan Margaret — D.C.
A.B. 1955, University of Massachusetts — D.C.
Whitter, David Southerland
Whittington, Helen Overton Vierling — Va.
A.B. 1939, Columbia University — Md.
A.M. 1955, The George Washington University
Whittington, Mary Louise
Whittington, Ransom Alban — Wyo.
Whitworth, Donald Phillip — Va.
Whyte, Thomas Russell — D.C.
Wiatrek, John — Md.
Wick, Julian Dertinck — Pa.
A.B. 1954, Oberlin College — Ohio
Wickersham, Galen
Wicks, Donald Willis — Okla.
B.S. 1954, University of Illinois — D.C.
Widdig, George Carnegie
Widenhouse, Colleen Elizabeth — D.C.
Widenhouse, Colleen Elizabeth — D.C.
Widman, John Marklem, Jr. — N.C.
Wieder, Lucy Louise — Pa.
Wiedenspahn, Elizabeth Helen — Fla.
Wiener, Robert I. — Texas
A.B. 1949, Lehigh University — Va.
Wiener, Rosa Dael
Wiesman, Franklin Rafael — D.C.
Wiesner, Charles Joseph — D.C.
Wiesner, Charles Joseph — D.C.
Doctor Juris 1929, Charles University Prague
Wiggins, Thomas Breden
Wigglesworth, Donald Clark — Mich.
A.B. 1950, Trinity College — D.C.
Wigglesworth, John Robert, Jr.
Wiggins, Augustus Randolph — Va.
Wignall, Robert Leland — D.C.
A.B. 1952, Oberlin College — N.Y.
A.M. 1954, Harvard University
Wigrett, Lloyd Fagan
A.B. 1937, Columbia University — Va.
Wiggs, Harold Arvid
Wiggs, Margie Robinson — Md.
A.B. 1942, South Carolina State College — D.C.
Wilborn, Dorothy Mae
Wilborn, James Rufus — Mo.
B.S. in C.E. 1947, Stanford University — D.C.
Wilbur, Robert Lynn, Jr.
Wilderberger, John Frank — D.C.
Wilderberger, Albertus Cornelius — Pa.
Wildman, Robert April — D.C.
B.S. in C.E. 1947, The George Washington University — Md.
Wildy, Helen Pauline
Wiles, Leila Marie — D.C.
Md.

Wiles, Robert Scott — D.C.
A.B. 1950, University of Oregon
Wiley, Beatrice Lamar — Va.
Wilkins, Harry Wesley — D.C.
B.S. 1954, The George Washington University
Wilkins, Helen Bertram — D.C.
Wilkins, Jane Gilmer — Va.
A.B. 1918, College of William and Mary
A.M. 1937, Duke University
Wilhelm, Mary Ida — D.C.
Wilkerson, Robert Albert — Md.
Wilkie, Charles Ross — Ohio
A.B. 1943, Marietta College
Wilkes, William Jacob — Va.
A.B. 1949, State University of Iowa
Wilkerson, Jack Irving — Va.
Wilkes, John Daniel — Wash.
Wilkie, Robert Charles — Pa.
Wilkins, Elizabeth Ann — D.C.
Wilkins, William Joseph — Md.
Wilkinson, James Richard III — Ga.
B.S. 1954, University of Pennsylvania
Wilkinson, Mary Margaret — Va.
A.B. 1943, The George Washington University
Wilkinson, Ronald Joe — Kans.
A.B. 1956, Municipal University of Wichita
Will, Fern Florence — Md.
A.B. 1942, The George Washington University
Will, Joseph Casper — Va.
A.B. 1937, Columbia College
Willard, William Creighton — Va.
A.B. 1954, The George Washington University
Willcox, Ralph Emerson — Md.
Willenz, June Adele — Md.
B.S. 1945, A.M. 1947, University of Michigan
Willett, Edward Farrand — Md.
A.B. 1954, Emmanuel Missionary College
Willett, John Eisenberg — Vt.
Williams, Albert Donald — D.C.
B.S. 1950, Miami University
Williams, Ann Morgan — Va.
Williams, Audrey Bradford — Fla.
Williams, Billy Buford — N.C.
Williams, Bryan McCaslin — D.C.
Williams, Charles Adkins — Fla.
Williams, Charles Owen, Jr. — Ind.
Williams, Charles Robert — D.C.
Williams, Donald Ellis — Wash.
Williams, Duncan Broadfoot — Pa.
Williams, Earle, Jr. — Ill.
B.S. 1951, A.M. in Ed. 1953, The George Washington University
Williams, Elmore Charles — Va.
Williams, Flora Rhea — Ark.
Williams, Francis Bryon — Va.
A.B. 1951, University of Virginia
Williams, James Chase — D.C.
B.S. 1949, Colorado Agricultural and Mechanical College
Williams, James Wadsworth, Jr. — Va.
B.S. 1955, Virginia Military Institute
Williams, Jo Ann — D.C.
Williams, John Ellsworth — Md.
Williams, John Hannah, Jr. — Va.
B.S. 1955, Wilson Teachers College
Williams, John Helga, Jr. — Md.

Williams, Kathryn Anne — Pa.
B.S. 1953, University of Pittsburgh

Williams, Lynn Maynard — Texas

Williams, Margarita Beatriz — Md.

Williams, Mary Elizabeth — D.C.

Williams, Mason Brandon — Va.
B.S. 1939, A.M. 1940, University of Virginia

Williams, Melvin Clayton — Pa.

Williams, Pawna Margryn — D.C.

Williams, Richard — Va.
A.B. 1940, George Peabody College for Teachers

Williams, Richard Edward — Pa.

Williams, Robert Edward — D.C.

Williams, Robert Theodore — Va.
B.S. in E.E. 1951, Michigan College of Mining and Technology

Williams, Sidney Frye, Jr. — Va.
B.M.E. 1949, Georgia Institute of Technology

Williams, Stanley Paul — D.C.
A.B. 1951, Virginia Military Institute

Williams, Thomas Julius Chew — Va.
B.S. in E.E. 1914, Johns Hopkins University

Williams, Thomas Richardson — Va.
A.B. 1951, The George Washington University

Williams, William Floyd — Wis.
B.E. 1950, Wisconsin State College

Williams, Willard Lester — Calif.
B.S. 1935, Whittier College

Williamson, Betty Ann — D.C.

Williamson, Louise Bennette — D.C.
A.B. 1927, Maryland Union University

Williamson, Roger Lindsay — Md.

Williamson, William Edward — D.C.
B.S. in Geo. Engr. 1951, University of Nevada

Williamson, William Reynard — Ind.

Willmer, Claude Franklin — Md.
B.S. 1942, Rose Polytechnic Institute

Willoughby, Lena Elliott — Va.
A.B. 1931, Bethany Peniel College

Wilson, Elizabeth Wilhelmina — Va.
Master of Law 1948, University of Amsterdam, Netherlands

Wilson, Edward Allen — Va.

Wilson, H. Jay Robert — Md.
A.B. in Ed. 1952, The George Washington University
A.M. in Ed. 1954, M.S. 1954, Jackson College

Wilson, James Clayton — Conn.

Wilson, Mary Willard — Va.

Wilson, Norman Hunt — Texas

Wilson, Peggy Sue — D.C.

Wilson, William Woodford — Va.

Wilson, Katherine Grant — D.C.

Wilson, Otis Robert Geddes — Mich.

Winnenberg, Willis Jackson, Jr. — D.C.
B.S. in M.E. 1942, University of South Carolina

Wise, Jeannette Elvira — W.Va.

Wise, Robert Wilbert — Va.
B.S. in M.E. 1951, West Virginia University

Wilson, Charles Robert — Mo.
A.B. 1934, University of Maryland

Wilson, Percy Hunt II — Va.

Wilson, Natalie Myrna — Pa.

Wilson, George Frank — Fla.
B.S. 1953, Florida State University

Wilson, Betty Jean — Pa.

Wilson, Carol Wilma — W.Va.

Wilson, Charles Lindberg — Md.

Wilson, Charles Richard — Calif.
B.S. 1948, Pennsylvania State University

Wilson, Diane Corinne — Pa.

Wilson, Donald Earl — Md.
B.S. 1949, Virginia Military Academy
M.Engr. 1950, Yale University

Wilson, Donald Franklin — D.C.
A.B. 1948, A.M. 1949, University of California, Berkeley

Wilson, Dorothy Marguerite — England
A.B. 1947, Cambridge University, England
M.S. 1952, Sheffield University, England

Wilson, Ensign Joy — Md.

Wilson, Francis Joseph — N.J.
LL.B. 1953, Upsala College

Wilson, Frank Wesley — Va.

Wilson, Frederick Eugene — Ill.

Wilson, Harold Kenneth — Pa.
LL.B. 1951, University of Oklahoma

Wilson, Harry Edward, Jr. — Pa.
B.S. 1950, George City College

Wilson, Jack Sinclair — D.C.

Wilson, James Bruce — Va.

Wilson, Jessie Clementine — D.C.
B.S. in Ed. 1936, University of Cincinnati
A.M. 1952, Ohio State University

Wilson, John Hamlet — D.C.
A.B. & B.S. 1933, Shepherd College

Wilson, Lola — Va.

Wilson, Lorraine Eleanor — W.Va.

Wilson, Marie H. — Md.
B.S. 1936, Alabama State Teachers College, Florence
A.M. 1951, George Peabody State College for Teachers

Wilson, Martha Jane — Va.

Wilson, Maryjane — D.C.
B.S. in Ed. 1940, Longwood College

Wilson, Miriam Janette — Ill.
A.B. 1951, Catholic University of America

Wilson, Nancy Dodge — Md.

Wilson, Oscar Britton — D.C.

Wilson, Otis Dwight, Jr. — Va.
A.B. 1942, The George Washington University

Wilson, Paul Grier, Jr. — Md.
A.B. 1950, University of Maryland

Wilson, Raymond Boyd — Va.

Wilson, Richard Eugene — D.C.
B.S. 1951, Queens College

Wilson, Robert Arthur — Md.

Wilson, Robert Marion — Va.

Wilson, Roy Leon, Jr. — Md.
B.S. 1941, Mississippi State College

Wilson, Thomas Edwin — D.C.
B.S. 1952, University of Illinois
M.S. 1953, The George Washington University

Wilson, Avis Jeanette — D.C.

Winder, Veronica Devlin — Va.

Winder, William Tucker — D.C.

Winnheim, Aaron Gottlieb — Conn.
A.B. 1948, University of Connecticut

Wiedenfeld, Einar Va.
A.B. 1940, North Dakota State Teachers College, Minot
M.B.A. 1955, The George Washington University
Wieble, Allan Lee
Wiegand, Gilda Joyce Md.
Wiegand, Claire Campbell D.C.
A.B. 1924, University of Pittsburgh D.C.
A.B. or L.S. 1927, The George Washington University
Wier, Robert Conner
B.S. 1955, U. S. Naval Academy Va.
M.B.A. 1959, Harvard University
LL.B. 1962, The George Washington University
M.S. 1951, University of Pittsburgh
Wier, Wilbur Lake
Wiesand, Richard Rath D.C.
Wiest, Audrey Lewis Md.
A.B. 1941, University of Wisconsin Wis.
Wiest, James Scott
Wiest, Walter Scott D.C.
Wiest, Ann Madeleine D.C.
Wiest, Geoffrey Charles D.C.
Hebrew National Certificate 1951, Eaton Va.
and Senior, Bedfordshire College of Further Education
Wikler, George Edward
Wilcox, Sandra Antoinette Md.
B.S. 1954, Russell Sage College N.Y.
Wilcox, William Sherwood
Wilcoxon, Genevieve Md.
Wilcoxon, Alice Frances Va.
A.B. 1947, Harvard University Md.
Wilcoxon, Josephine Patterson
B.S. 1954, The George Washington University Va.
Wilcoxon, Gertrude Chesley
Wilcoxon, Mary Jane
Wilcoxon, Kenneth Wheelle Va.
Wilcoxon, William Brooks N.Y.
Wilcoxon, William Simpson N.C.
Wilcoxon, Marcia Md.
B.S. 1955, Md.
M.S. in C.E. 1956, Drexel Institute Pa.
Wilcoxon, Lawrence
B.S. 1952, University of Maryland Md.
Wilcoxon, Ray Henry
B.S. 1948, The George Washington University Pa.
Wilcoxon, Howard Saul
B.M.E. 1955, New York University D.C.
Wilcoxon, Jean Kay
Wilcoxon, Marion Lavery D.C.
A.B. 1952, New York University Va.
Wilcoxon, Raymond J.
Wilcoxon, Rebecca Lucas
A.B. 1950, Cedar Crest Colo.
Wilcoxon, Ellen Esser 1950, The George Washington University D.C.
Wilcoxon, Ruth
Wilcoxon, Rita Anne
Wilcoxon, Lucia Blair Pa.
A.B. 1955, University of Maryland D.C.
Wilcoxon, Howard Pierce Va.
A.B. 1951, Elizabethtown College Md.
Wilcoxon, Mary Lee Long
A.B. 1942, North Carolina College Va.
Wilcoxon, Leora Imogene
Wilcoxon, Marion Samuel Ill.
B.S. 1955, Brigham Young University D.C.

Wilcoxon, Donald Lewis Va.
Wilcoxon, Sandra Lee Md.
Wilford, Ellis Stephens Md.
A.B. 1951, A.M. 1953, Florida State University
Wilford, Lewis Dayne, Jr. Md.
B.S. in C.E. 1942, University of Texas
Wilgus, Christopher Marshall Nev.
Wilgus, Deborah Steinheimer Nev.
Wilgus, Evelyn Shirley Va.
A.B. 1923, Illinois Wesleyan University
A.M. 1925, Yale University
Wilkerson, Chester Gaines Pa.
Wilkinson, Dorothy Ann Pa.
Wilkinson, Thomas Joseph Md.
A.B. 1951, Loyola College
Wilkins, Kathleen Sandy Md.
A.B. 1950, Western Reserve University
A.M. 1951, Columbia University
Wilkins, Frank Ralph D.C.
Wilkins, Barbara Collins D.C.
A.B. 1944, The George Washington University
Wilkins, Edna L.
A.B. 1953, School of Economics of Leipzig, Germany D.C.
Wilkins, Patricia Barbara D.C.
Wilkins, Peter Hennessy D.C.
Wilkins, Herbert Monroe D.C.
Wilkins, Russell Wagner Pa.
A.B. 1951, Lebanon Valley College
Wilkins, Warren Wilson D.C.
Wilkins, Alfred Ferguson D.C.
Wilkins, Anna Rodgers D.C.
Wilkins, Annie Goodenough Va.
A.B. 1947, Randolph-Macon College
Wilkins, Jessica Anne Va.
Wilkins, Richard Rochelle Ill.
B.S. 1951, Oklahoma Agricultural and Mechanical College
Wilkins, Horace Lewis N.Y.
B.B.A. 1948, College of the City of New York
LL.B. 1951, New York University
Wilkins, Sandra Ann N.Y.
A.B. 1955, University of California at Los Angeles
Wilkins, Franklin David D.C.
B.S. 1954, University of Maryland
Wilkinson, Joseph Francis D.C.
Wilkinson, Earl Bruce Va.
B.S. 1949, Bridgewater College
Wilkinson, Jacqueline Marie Md.
Wilkins, William Md.
Wilkins, Barbara Elaine D.C.
Wilkins, Rosemary Md.
Wilk, Marion D.C.
Wilkinson, Pearl D.C.
Wilkins, Darrell D.C.
A.B. 1951, Allegheny College Va.
Wilkinson, W. Eugene
Wilkins, Evelyn Hilliard N.J.
B.S. 1948, Longwood College Va.
Womack, Grace Alexander Md.
A.B. 1942, Morehead State University
Wilkinson, Richard Thomas D.C.
Wilkins, Eugene D.C.
Wilkins, James K. D.C.
Wilkins, Charles Bryant Calif.
B.S. 1950, American University D.C.

Wood, Charles William Va.
LL.B. 1949, The George Washington University
Wood, Dick Raymond N.Y.
A.B. 1953, New York State College for Teachers, Albany
Wood, Gloria Murray Md.
Wood, James Henry, Jr. Va.
B.S. in Phar. 1955, The George Washington University
Wood, John Palmer D.C.
Wood, Kathryn Louise Calif.
A.B. 1942, Immanuel Missionary College
Wood, Lawrence W. D.C.
Wood, Lenora Mary D.C.
Wood, Mary Meyer Va.
A.B. 1941, Wesleyan College
Wood, Richard Moulton, Jr. Va.
Wood, Susan Vernon Md.
Woodard, Anna Bowden D.C.
A.B. 1924, A.M. 1931, LL.B. 1938, The George Washington University
Woodard, Lucille Phyllis D.C.
Woodard, Maurice Richard D.C.
B.S. 1951, American University
Woodcock, Carlton Alson D.C.
Wooden, Barton Ward, Jr. Fla.
B.S. 1955, Howard University
Wooden, William Rogers D.C.
Woodend, James Richard D.C.
Woodhead, Evelyn Mary Mass.
Woodrow, William Scott Md.
B.S. 1952, M.S. 1954, West Virginia University
Woodruff, Willard Henry Va.
Woods, David William N.Y.
B.S. 1942, U. S. Coast Guard Academy
Woods, Priscilla Bryant D.C.
Woods, Thomas Alfred D.C.
B.S. in C.E. 1931, Armour Institute of Technology
Woodson, Joseph Bernd D.C.
B.S. 1944, Swarthmore College
Woodson, Watkins Whittaker Va.
B.S. 1948, Clemson College
Woodward, Kenneth Emerson D.C.
B.M.E. 1949, The George Washington University
M.S. 1953, University of Maryland
Woodworth, Howard Hampton Md.
B.S. 1942, University of Minnesota
Woodworth, Virginia Richards Conn.
Woolen, Ronald Harlan, Jr. Va.
A.B. 1954, The George Washington University
Wooldridge, Arthur Ross Pa.
B.S. 1941, University of Texas
Woolley, Ronald Edward Miss.
Woon, Bert Harold Reginald D.C.
A.B. 1955, The George Washington University
Woolley, Doris Estes Mass.
Woolls, James Va.
A.B. 1951, Virginia Military Academy
Woolwine, William Thomas D.C.
Word, Martha Lucille Va.
B.S. 1951, Mississippi Southern College
Worden, Mary H. D.C.
Worley, Joseph Francis D.C.
Worley, William R. D.C.
Worland, June Amorita Wash.

Worrall, John William Pa.
A.B. 1951, University of Pennsylvania
Worth, Daniel Phair Md.
B.S. in M.E. 1949, Purdue University
Worthington, Nancy Md.
A.B. Ed. 1954, Shepherd State College
Wortman, Helen Ruff Va.
Woschnuta, Alexander Stephan Va.
Woy, Theodore Charles Calif.
Wray, William Neal D.C.
B.S. 1952, University of Maryland
Wren, John Christie
A.B. 1954, Haverford College
Wrenn, Robert John Lenihan
Wrenn, William Richard
B.S. 1953, High Point College
Wriggle, Gordon Wayne Pa.
Wright, Barbara Lee Va.
Wright, Billy Dee Va.
Wright, Burton Pa.
B.S. 1948, M.S. 1949, University of Washington
Wright, George Rawley
A.B. 1951, Washington College
Wright, Jeanette Farrow Md.
Wright, John Thurston, Jr.
Wright, Marjory Hawley
A.B. 1948, B.S. 1950, Texas College for Women
M.S. 1942, University of Chicago Mass.
Wright, Mildred Augusta Va.
Wright, Peter Va.
Wright, Ruby Isabel Md.
Wright, Thomas George D.C.
Wright, William Joseph D.C.
Wright, William Ralph, Jr. Va.
Wu, Ching Cheng
Wulfsberg, Einar Theodore D.C.
A.B. 1955, Luther College
M.S. 1958, University of Minnesota
Wulkan, Walter
B.S.S. 1951, College of the City of New York Pa.
A.M. 1952, New York University
Wulrich, Nicholas N.Y.
B.S. 1948, Duquesne University D.C.
Wurman, Phylia Joyce Pa.
Wyatt, Thomas Frederick Ohio
Wyatt, Mary K.
Wyatt, Jack William
A.B. 1955, The George Washington University
Wyener, Robert Lee Va.
Wyman, Alvin Edwin Mass.
Wyman, Carol Wondrack D.C.
Wyman, Gloria Rose Md.
Wyman, Lawrence Edward D.C.
Wynne, Patricia Magdalena Va.
Wysong, William Smith
A.B. 1953, Shepherd State College

Y

Yablon, Harold Md.
Yacoumis, Michael D.C.
Diploma 1951, Athens Technical Institute
Yager, Helen Veronica Pa.
Yaksic, Andrew Joseph Hawaii
Yamada, Kiyoshi
Yamada, Tsuneo
A.B. 1955, Iowa State Teachers College Japan
Yamakawa, Tommy Masahiro

Yanak, Albert
A.B. 1950, Antioch College — Va.
Yang, Seung Oak
A.B. 1955, Tusculum College — Korea
Yanowitz, William Gerald — N.J.
Yarmowitz, Gilbert Herbert — N.Y.
A.B. 1952, College of the City of New York
Yao, Chi Wei
A.B. 1955, Rosary College — D.C.
Yarborough, Fannie Gailes
B.S. 1945, North Carolina State Teachers College, Fayetteville
Yaton, Rudolph Robert — Md.
A.B. 1952, Washington Missionary College
Yarrington, Lester Roland, Jr.
Yarrow, Ella Joanne — Md.
Yassenjanak, Kambis — Md.
Yates, Charles L. — D.C.
B.S. in E.E. 1948, Pennsylvania State University — D.C.
Yates, Hoover Atwell
Yates, Jack A.
Yates, Nancy Lewis — D.C.
Yates, Paul Best II — Va.
A.B. B.S. 1951, Ohio State University — D.C.
Yates, Vernon Wesley — Va.
Yates, William Avery, Jr.
B.E.E. 1954, The George Washington University — III
Yatsko, Richard Alan — Va.
Yauger, Irene Elizabeth
Yaworsky, Alberta Saveman — Md.
Yeatts, Lynda Hostetter — D.C.
B.S. 1948, Madison College — Brazil
Yee, Jason Fatt Gung — Va.
Yee, Paul Mun Hoong
B.S. 1950, University of Redlands — Canal Zone
Yeomans, David Allan — Calif.
Yeomans, Ina Brenta
Yerge, Charles Ree — D.C.
A.B. 1943, Chinese National Amoy University — D.C.
Yoder, Leonard Griggs
B.S. 1949, U.S. Military Academy — D.C.
Yokum, Otis Matchett
Yonce, Sarah Dee — Md.
Yore, Preston Richard — Korea
LL.B. 1951, University of Portland — Maine
Doctor of Jurisprudence 1954, University of Geneva
York, Henry Edward
A.B. 1950, Randolph-Macon College — Va.
Yorke, Alan Hampton
Yorke, Richard Hampton — D.C.
Young, Charles Craig — D.C.
Young, William Joseph — Md.
Young, Benjamin Lamar Farrar — D.C.
Young, Hermann Johnson, Jr. — Hawaii
Young, Jared Dean — Va.
Young, James Howard — D.C.
B.S. in M.E. 1950, University of Alabama — Va.
Young, Mary Wasciand — Ala.
Young, George Wesley, Jr.
Young, George Yoen — Md.
A.B. 1954, Lafayette College — D.C.
Young, Ira Sanders — N.Y.
Young, James Nelson
B.S. in E. 1954, Virginia Polytechnic Institute — Va.
Young, Kevin Bowers — Va.
Young, Marguerite Louise — Md.
A.B. 1942, A.M. 1943, University of Wisconsin
Young, Marguerite Mary — D.C.
Young, Marilyn June — Ohio
A.B. 1955, Ohio State University
Young, Mary Catherine — D.C.
Young, Nancy Ellen — Va.
B.S. 1954, Ohio State University
Young, Raymond Warren — N.J.
A.B. 1945, New Jersey State Teachers College
A.M. 1948, Rutgers University
Ph.D. 1951, Johns Hopkins University
Young, Richard Allen — Va.
Young, Richard M. T. — Va.
E. Met. 1938, Colorado School of Mines
Young, Richard Wayne — D.C.
Young, Robert Shannon — Calif.
B.S. 1953, University of Wisconsin
Young, Stanford — Md.
B.S. 1948, University of Utah
M.S. 1951, Utah State Agricultural College
Young, William Mitchell — D.C.
Young, William Packard — Va.
B.S. in E.E. 1951, Pennsylvania State Teachers College, Mansfield
Younker, Leroy
Youssef, Ahmed Mahmoud — Md.
B.S. 1950, Cairo University — D.C.
Yuen, Alice Mary — Hawaii
A.M. 1951, University of Michigan
Yuen, Betty Anne
Yu, Harold, Jr. — D.C.
Yu, Leung Pong — D.C.
A.M. 1948, Tokyo Imperial University — D.C.
Yue, Rose
Yuen, Charley — III
Yuen, Ruth — D.C.
Yunick, Esther Rust — D.C.
Yung, Kwan Conrad — Va.
A.B. 1953, Yale University — D.C.
Yungen, Carmen Gutierrez
Yuen, Ruth — Calif.
Yuen, John Jesse — D.C.
A.B. 1953, The George Washington University — Md.
Yurow, Victor Roy
Yus, Joseph Peter — D.C.
B.S. 1954, University of Pittsburgh — Pa.
Yuthasmongkol, Prasarn — Thailand
Yuzo, Samuel Joseph, Pfc. USAF — D.C.
B.S. 1949, Carnegie Institute of Technology

Z

Zabkiewicz, John Edmund — Va.
A.B. 1953, Middlebury College
Zabney, Mary Emma
Zahn, Robert Lloyd — D.C.
B.S. 1949, Missouri Valley College — Mo.
Zahnzinger, Helen Martha
Zamzow, Nicholas James — S.D.
Zakarian, Avam — D.C.
A.B. 1952, The George Washington University — D.C.
Zalesak, Carl Eugene
Zaleski, Paul — Pa.
LL.M. 1939, Lwow University, Poland — D.C.
Zaller, Frank Albert — Pa.

Zamanakos, Arthur Stergius Va
A.B. 1950, Boston University
Zander, Fred George Md
Zeidman, Vincent Gerald N.Y.
B.S. 1951, College of the City of New York
Zapata, Rubin Antonio D.C.
Zapolski, Edward J. D.C.
Zapoll, Lawrence Irving D.C.
Zarbin, Elinor Levy Va.
A.B. 1945, University of Minnesota
Zavarin, Julia Pa.
Zegeer, Lin W.Va.
B.S. in E.E. 1951, West Virginia University
Zehner, Karen D.C.
Zeiss, Florence D.C.
Zeller, Jack Richard Va.
Zemlin, Cecilia V. N.Y.
Zenner, Edna Grace Va.
Zenith, James Earl Va.
B.B.A. 1949, University of Cincinnati
Zerwekh, Keith Lee S.D.
B.S. in C.E. 1948, University of Colorado
LL.B. 1951, South Dakota University
Zervos, Kay Elaine D.C.
Zia, Mohamed Ahmad Pakistan
A.B. 1954, Punjab University
Zick, Marvin Darrell W.
A.B. 1947, Ripon College
Zield, Rolland Charles Wis.
B.S. 1952, The George Washington University
Zieman, Robert Frederick Mich.
B.S. in C.E. 1951, Michigan College of Mining and Technology
Ziets, Eli Md.
B.S. Ed. 1951, University of Nebraska
Zilber, Nelson Lee Md.
Zimmerman, Rita Kravera Conn.
Zimmerman, Stephen D.C.
Zimmer, Joseph Philip, Jr. Md.
A.B. 1954, Fordham University
Zimmerman, Carl B. Iowa
A.B. 1953, State University of Iowa

Zimmerman, Ernest Frederick Mo.
Zimmerman, Jack Pearce Kan.
B.S. 1948, U.S. Naval Academy
Zimmerman, Jessie Norman D.C.
Zimmerman, Rachel Dudley Pa.
Zimmerman, Sister Mary Mathias Pa.
Zinn, Donald Edward
B.S. in M.E. 1954, Pennsylvania State University N.J.
Zipern, Martin Samuel N.Y.
Zissers, Al
B.S. 1956, College of the City of New York N.Y.
Zittle, David Hussey, Jr.
Zizz, Maria Madeline
A.B. 1954, Seton Hill College W.
Zoch, Reginald Parker
A.B. 1951; A.M. 1954, The George Washington University
Zodda, Grace Teresa
Zolyak, John
A.B. 1954, The George Washington University
Zook, James David
Zorman, Hoover Edwin
Zorzos, Nicholas Louis
B.S. 1953, Georgetown University Switzerland
Zoulias, Anne Marie
Zuliani, Nicholas Richard
Zupel, Francis Eugene
Zupsher, Irving Leslie
B.S. 1951, University of Cincinnati
Zuker, Rupert Kenneth
Zumbiser, Anthony Samuel
B.S. in M.E. 1956, Purdue University
Zumoff, Benjamin
Zunin, Jennifer M.
Zurer, Frances Merle
A.B. 1948, Smith College
Zurita, Silvia Eve
Zuschlag, Murray
B.S. 1948, M.S. 1950, New York State College for Teachers, Albany N.Y.
Zuscher, Sandra Francine

SUMMARY OF REGISTRATION

1955–56

Junior College

	Men	*Women*	*Total*
Freshmen	556	444	1,000
Sophomores	683	443	1,126
Total	1,239	887	2,126

Columbian College

Juniors	160	141	301
Seniors	201	201	402
Candidates for the degree of Master of Arts	177	111	288
Candidates for the degree of Master of Science	98	11	109
Unclassified	12	7	19
Total	648	471	1,119

The Graduate Council

Candidates for the degree of Doctor of Philosophy	145	23	168

The School of Medicine

First Year	100	3	103
Second Year	87	5	92
Third Year	85	5	90
Fourth Year	82	5	87
Total	354	18	372

The Law School

First Year	428	25	453
Second Year	296	24	320
Third Year	352	22	374
Candidates, degree of Master of Laws	75	1	76
Candidates, degree of Master of Comp. Law	20	–	20
Candidates, degree of Master of Comp. Law Adm. Prof.	10	–	10
Candidates, degree of Doctor of Juridical Science	12	–	12
Unclassified	52	2	54
Total	1,245	74	1,319

The School of Engineering

	Men	*Women*	*Total*
Freshmen	238	6	244
Sophomores	177	1	178
Juniors	137	4	141
Seniors	141	1	142
Candidates for the degree of Master of Science	79	–	79
Candidates, degree of Master of Engineering Adm.	254	1	255
Unclassified	20	–	20
Total	1,046	13	1,059

The School of Pharmacy

Juniors	16	1	17
Seniors	22	–	22
Total	38	1	39

The School of Education

Juniors	14	74	88
Seniors	48	78	126
Candidates for the degree of Master of Arts	183	211	394
Candidates for the degree of Doctor of Education	52	18	70
Unclassified	54	112	166
Total	348	496	844

The School of Government

Juniors	107	34	141
Seniors	172	36	208
Candidates for the degree of Master of Arts	177	38	215
Candidates for the degree of Master of Bus. Adm.	108	3	111
Candidates for the degree of Master of Pub. Adm.	20	4	24
Candidates for the degree of Doctor of Bus. Adm.	14	2	16
Unclassified	9	1	10
Total	607	118	725

The College of General Studies

College of General Studies Students	53	7	60

The Division of University Students

University Students	2,184	1,505	3,689

The Division of Special Students

Special Students	734	158	892

SUMMARY

	Men	*Women*	*Total*
Students Registered, Academic Year 1955–56	13,021	5,311	18,332
Students Registered, Summer Sessions 1955	2,653	1,484	3,137
Total Registration 1955-56	15,754	6,315	21,969
Duplicate Registrations	6,972	2,585	9,557
Total Number of Students Registered 1955–56*	8,682	3,730	12,412

*The above does not include:

The College of General Studies (Off Campus)			
Credit Courses	1,591	707	2,298
Non-credit Courses	595	308	903
Total	2,186	1,015	3,201

TEACHING STAFF 1955–56

Professors Emeritus	22
Professors	111
Research Professors	1
Adjunct Professors	7
Professorial Lecturers	87
Clinical Professors	18
Adjunct Clinical Professors	6
Associate Professors	65
Associate Clinical Professors	12
Associate Research Professors	1
Associates in the School of Medicine	119
Assistant Professors	53
Assistant Clinical Professors	59
Assistant Research Professors	7
Lecturers	116
Instructors	34
Clinical Instructors	145
Associates	68
Fellows	55
Technical Assistants	14
TOTAL	1,000

DEGREES CONFERRED

Associate in Arts	491
Bachelor of Arts	245
Bachelor of Arts in Education	47
Bachelor of Arts in Government	131
Bachelor of Civil Engineering	7
Bachelor of Electrical Engineering	26
Bachelor of Laws	165
Bachelor of Laws (National University)	19
Bachelor of Mechanical Engineering	19
Bachelor of Science	26
Bachelor of Science in Engineering	10

Bachelor of Science in Home Economics	23
Bachelor of Science in Pharmacy	15
Bachelor of Science in Physical Education	1
Doctor of Business Administration	2
Doctor of Education	88
Doctor of Medicine	34
Doctor of Philosophy	40
Juris Doctor	57
Master of Arts	65
Master of Arts in Education	37
Master of Arts in Government	7
Master of Arts in Personnel Administration	8
Master of Arts in Public Administration	81
Master of Business Administration	2
Master of Comparative Law	4
Master of Comparative Law (American Practice)	12
Master of Engineering Administration	27
Master of Laws	1
Master of Laws (National University)	34
Master of Science	2
Master of Science in Engineering	1
	1,682

GEOGRAPHICAL DISTRIBUTION OF STUDENTS

United States, Territories, and Possessions

Alabama	45	Nevada	25
Arizona	13	New Hampshire	104
Arkansas	18	New Jersey	20
California	196	New Mexico	475
Colorado	26	New York	3
Connecticut	80	North Carolina	9
Delaware	9	North Dakota	10
District of Columbia	3,985	Ohio	25
Florida	144	Oklahoma	4
Georgia	50	Oregon	31
Idaho	22	Pennsylvania	33
Illinois	137	Rhode Island	18
Indiana	69	South Carolina	10
Iowa	42	South Dakota	7
Kansas	42	Tennessee	5
Kentucky	28	Texas	6
Louisiana	10	Utah	2,8
Maine	27	Vermont	4
Maryland	2,090	Virginia	11
Massachusetts	15	Washington	5
Michigan	89	West Virginia	4
Minnesota	42	Wisconsin	2
Mississippi	31	Wyoming	20
Missouri	57	Alaska	1
Montana	17	Hawaii	
Nebraska	33	Puerto Rico	

Foreign Countries

Afghanistan	1	Israel	6
Argentina	2	Japan	9
Australia	2	Java	1
Bahamas	1	Jordan	1
Belgium	1	Korea	23
Bolivia	1	Latvia	1
Brazil	2	Lebanon	3
Burma	8	Liberia	2
British Guiana	1	Libya	2
Canada	1	Lithuania	1
Canal Zone	3	Mexico	3
Chile	1	Netherlands	4
China	1	Norway	2
Colombia	6	Palestine	5
Costa Rica	10	Panama	2
Cuba	1	Paraguay	1
Dutch Guiana	4	Peru	1
Egypt	1	Philippines	18
England	3	Portugal	1
Formosa	2	Samoa	2
France	1	Siam	2
Gold Coast	3	Spain	3
Germany	1	Sweden	1
Greece	3	Switzerland	1
Guatemala	5	Syria	1
Hong Kong	1	Thailand	7
Hungary	2	Trinidad	1
India	1	Turkey	2
Indonesia	10	Venezuela	2
Iran	1	Vietnam	1
Iraq	11	Yugoslavia	1
	9		

ALUMNI AND AFFILIATED ASSOCIATIONS

THE GENERAL ALUMNI ASSOCIATION

The objects of this Association are to unite the graduates in closer sympathy and to promote the general welfare of the University. The following persons are eligible for *active* membership: graduates of any college, school, or division of the University; holders of honorary degrees from the University; and members of the Board of Trustees and of the Faculty of the University. Any person who has matriculated, who has been in regular attendance for one year, and who has left the University in good standing, is eligible for *associate* membership.

The Office of Alumni Relations is situated at 708 22d Street, Washington 6, D. C. Alumni are urged to keep the office informed of changes of address or occupation and to supply information with regard to their fellow alumni.

1956–57

GOVERNING BOARD

President.—James Robert Kirkland, A.B. 1927, LL.B. 1928, LL.M. 1929 (B.C.S. 1931, Benjamin Franklin University); 5226 Loughboro Road NW., Washington, D. C.

Vice Presidents:

Columbian College.—Henry F. Hubbard, A.B. 1928, A.M. 1929, Ph.D. 1934; 6318 32d Street NW., Washington, D. C.

Graduate Council.—George W. Irving, Jr., B.S. 1933, A.M. 1935, Ph.D. 1939; 4836 Langdrum Lane, Chevy Chase, Md.

School of Medicine.—Luther Henry Snyder, M.D. 1935; 3640 Everett Street NW., Washington, D. C.

Law School.—Charles Oscar Berry, LL.B. 1932, A.B. 1933; 432 43d Street NW., Washington, D. C.

School of Engineering.—Reuben Francis Leatherwood, B.S. in C.E. 1923; 105 Grafton Street, Chevy Chase, Md.

School of Pharmacy.—F. Royce Franzoni, B.S. in Phar. 1936; 3508 N Abingdon Street, Arlington, Va.

School of Education.—Elsie Green, A.B. 1914, A.M. 1928; 3151 Tennyson Street NW., Washington, D. C.

School of Government.—Otto Schoenfelder, A.B. in Govt. 1933, LL.B. 1942; Tax Court of the United States, Washington, D. C.

Treasurer.—Anna Marie Bischoff, A.B. 1928; 2025 I Street NW., Washington, D. C.

Executive Secretary.—Mary Dow, A.B. 1953; 4734 N. 20th Street, Arlington, Va.

Appointed Members:

Alfred Emanuel Brigulio, M.D. 1936; 2025 I Street NW., Washington, D. C.

Lemuel Jackson Embrey, A.B. 1937, LL.B. 1949, LL.M. 1949; 647 22d Street S., Arlington, Va.

Mildred Sandison Fenner, A.M. in Ed. 1938, Ed.D. 1942; 1101 Kirk Inn Avenue, Takoma Park, Md.

Morris Gersel Goldstein, Phar.D. 1915; 2704 Woodley Place NW., Washington, D. C.

Walter James Greenleaf, Ph.D. 1922 (A.B. 1912, Bowdoin College; A.M. 1918, Princeton University); 3149 Newark Street NW., Washington, D. C.

Burnice Herman Jarman, A.M. 1932, Ed.D. 1938; 1802 N. Danville Street, Arlington, Va.

Robert Eugene Newby, ex. 1926; 2706 East West Highway, Chevy Chase, Md.

Charles Jules Rose, A.B. 1942; LL.B. 1949; Investment Building, Washington, D. C.

Hillory Alfred Tolson, A.B. 1924, A.M. 1927 (LL.B 1930, LL.M. 1931, M.P.L. 1931, National University School of Law); 5200 Sangamore Road, Washington, D. C.

James Cornelius Van Story, Jr., A.B. 1948, A.M. 1949; 1145 19th Street NW., Washington, D. C.

THE GEORGE WASHINGTON UNIVERSITY MEDICAL SOCIETY

The George Washington University Medical Society, the organization of graduates of the School of Medicine, was established in 1905 and since 1926 has been affiliated with the General Alumni Association. The objects of the Society, as stated in the constitution, are "The promotion of the science and art of medicine and the welfare of the School of Medicine."

1956–57

President.—Richard Henry Fischer, B.S. 1939, M.D. 1943; 1801 I Street NW., Washington, D. C.

President Elect.—Donald Harper Leeper, Jr., M.D. 1938 (B.S. 1932, Davidson College); 1835 I Street NW., Washington, D. C.

First Vice President.—Helen Gladys Kain, B.S. in Chem. 1917, M.D. 1923; 1801 I Street NW., Washington, D. C.

Second Vice President.—Frederick Young Donn, Jr., M.D. 1941; 4800 8th Street NW., Washington, D. C.

Secretary.—J. Roscoe Creer, M.D. 1935; 5205 Dorset Avenue, Kenwood, Md.

Treasurer.—Naomi Marilyn Kanof, A.B. 1931, M.D. 1934; 1150 Connecticut Avenue NW., Washington, D. C.

Council:

Herman Solomon Hoffman, A.B. 1921, M.D. 1924; 3316 Newark Street NW., Washington, D. C.

John Hugh Lyons, M.D. 1918, B.S. 1919 (M.S. 1923, University of Minnesota); 1150 Connecticut Avenue NW., Washington, D. C.

Robert Rice Montgomery, M.D. 1943 (A.B. 1945, Lafayette College). 1746 K Street NW., Washington, D. C.

Luther Henry Snyder, M.D. 1935 (A.B. 1931, Gettysburg College); 915 10th Street NW., Washington, D. C.

Leland Ernest Stevenson, M.D. 1934; 1219 16th Street NW., Washington, D. C.

THE GEORGE WASHINGTON LAW ASSOCIATION

The George Washington Law Association, the organization of graduates of the Law School, was founded in 1912 and has been affiliated with the General Alumni Association since 1926. Its purposes as stated in the constitution are to promote high standards of legal education, to keep the alumni of the Law School in closer touch with one another and especially with members of their own classes, to gather and publish at intervals information as to the whereabouts and activities of these alumni, and to further the interests of the Law School.

1956–57

President.—Joseph D. Hughes, LL.B. 1934; (B.S. 1930, Alabama Polytechnic Institute; LL.M. 1935, Georgetown University); 525 William Penn Way, Pittsburgh, Pa.

First Vice President.—Bernard I. Nordlinger, A.B. 1929, LL.B. 1933; 3539 Chesapeake Street NW., Washington, D. C.

Second Vice President.—Emory L. Groff, LL.B. 1932, LL.M., M.P.L. 1933 (National University); McLachlen Building, Washington, D. C.

Third Vice President.—Fontaine Cosby Bradley, LL.B. 1925; 1820 45th Street NW., Washington, D. C.

Secretary-Treasurer.—Elizabeth Strachan Freret, LL.B. 1950 (B.B.A. 1942, Tulane University); World Center Building, Washington, D. C.

Executive Committee:

Charles Oscar Berry, LL.B. 1932, A.B. 1933; 1100 H Street NW., Washington, D. C.

W. Cameron Burton, LL.B. 1921; Investment Building, Washington, D. C.

Margaret H. Earley, LL.B. 1934 (National University); 4200 Cathedral Avenue NW., Washington, D. C.

James M. Earnest, LL.B. 1932 (B.S. 1927, Alabama Polytechnic Institute); Woodward Building, Washington, D. C.

David A. Fegan, LL.B. 1942 (National University); American Security Building, Washington, D. C.

Jonathan C. Gibson, LL.B. 1923; 80 Railway Exchange Building, Chicago, Ill.

Sam Houston, LL.B. 1937 (National University); 725 13th Street NW., Washington, D. C.

Philbrick McCoy, LL.B. 1922, LL.M. 1923; The Superior Court, Los Angeles 12, Calif.

James F. Perrin, LL.B. 1937 (National University); 3027 Chestnut Street NW., Washington, D. C.

Charles Edward Pledger, Jr., LL.B. 1927; Washington Building, Washington, D. C.

John Johnson Wilson, LL.B. 1921; 815 15th Street NW., Washington, D. C.

THE LIBRARY SCIENCE ALUMNI ASSOCIATION

The Library Science Alumni Association was organized in 1932 by graduates of the Division of Library Science and became an affiliate of the General Alumni Association in 1935. It was established to foster a closer relationship between the Faculty and graduates and to further the interests of the Division of Library Science and of the University as a whole.

1956-57

President.—Marguerite Vogeding Quattlebaum, A.B. in L.S. 1939; 1120 28th Street S., Arlington, Va.

Vice President.—Margaret A. Bird, A.B. in L.S. 1932; 732 S. Royal Street, Alexandria, Va.

Secretary.—Virginia Wise Breen, A.B. in L.S. 1929, A.M. in L.S. 1932; 5603 14th Street NW., Washington, D. C.

Treasurer.—Florence King, A.B. 1934; 530 Cedar Street NW., Washington, D. C.

THE ENGINEER ALUMNI ASSOCIATION OF THE GEORGE WASHINGTON UNIVERSITY

The Engineer Alumni Association was organized in 1936 and has been affiliated with the General Alumni Association since that time. Its objects are to unite the graduates and Faculty of the School of Engi-

neering in closer fellowship, to promote the general welfare of the School of Engineering and of the University at large, to foster activities of the engineering organizations recognized by the University, and to advance the profession of engineering in general.

1956–57

President.—Frank Taylor Mitchell, Jr., B.E.E. 1940; 5332 Saratoga Avenue, Chevy Chase, Md.

Vice President.—Carl Henry Roeder, B.S. in M.E. 1937; 1223 Woodside Parkway, Silver Spring, Md.

Secretary-Treasurer.—John Paul Conner, B.E.E. 1950; 8204 Nolte Street, Silver Spring, Md.

Corresponding Secretary.—Wallace Grover Kistler, Jr., B.M.E. 1949; 741 S. Florida Street, Arlington, Va.

Executive Committee:

Reuben Francis Leatherwood, B.S. in C.E. 1933; 105 Grafton Street, Chevy Chase, Md.

Harry Cornelius Connor, B.S. in M.E. 1937; 4201 Sheridan Street, Hyattsville, Md.

Warren C. Crump, B.C.E. 1940; 4837 16th Street NE., Washington, D. C.

THE GEORGE WASHINGTON UNIVERSITY NURSES ASSOCIATION

The George Washington University Nurses Association was organized in 1914. In 1936 this organization was made an integral part of the General Alumni Association, and graduates of the School of Nursing were accorded associate membership. The objects of the Association are to hold in unison the graduates of the George Washington University Hospital School for Nurses, to care for its sick members and to promote the advance of nursing in the interest of the George Washington University Hospital.

1955–56

President.—Flora Schroebel, N. Dip. 1929; 4730 16th Road N., Arlington, Va.

Vice President.—Pauline Tarpley, N. Cert. 1931; 1228 I Street NW., Washington, D. C.

Secretary.—Ruth Poindexter, N. Dip. 1924; 1815 17th Street NW., Washington, D. C.

Treasurer.—Alma W. Stevens, N. Dip. 1928; 4106 Madison Street, Hyattsville, Md.

THE PHARMACY ALUMNI ASSOCIATION

The Pharmacy Alumni Association was organized in 1955 and is affiliated with the General Alumni Association. Its objects are to unite the graduates and Faculty of the School of Pharmacy in closer fellowship, to promote the general welfare of the School of Pharmacy and of the University at large, to foster activities of the pharmacy organizations recognized by the University, and to advance the profession of pharmacy in general.

1956–57

President.—F. Royce Franzoni, B.S. in Phar. 1936; 3508 N. Abingdon Street, Arlington, Va.

Vice President.—Morris Gersel Goldstein, Phar.D. 1915; 2704 Woodley Place NW., Washington, D. C.

Secretary-Treasurer.—Albert Morris DuGoff, B.S. in Phar. 1951; 8506 Tahona Drive, Sliver Spring, Md.

REGIONAL ALUMNI CLUBS

Regional alumni clubs sponsored by the General Alumni Association are maintained in the following places: Los Angeles, Calif.; Denver, Colo.; Miami, Fla.; Atlanta, Ga.; Chicago, Ill.; Baltimore, Md.; Boston, Mass.; Detroit, Mich.; Kansas City, Mo.; Brooklyn, N. Y.; New York City, N. Y.; Cleveland, Ohio; Tulsa, Okla.; Portland, Oreg.; Philadelphia, Pa.; Pittsburgh, Pa.; Dallas, Texas; Norfolk, Va.; Seattle, Wash.; Milwaukee, Wis.; Arkansas; Northern California; New Jersey; Ohio River Valley; Utah; Hawaii; Japan; Philippine Islands; Puerto Rico.

Information about the officers and activities of these clubs may be obtained from the Alumni Office of the University.

THE GRADUATE ENDOWMENT FUND

The Graduate Endowment Fund was founded by the class of 1926 with the object of providing endowment to be used for the development of the University. Membership is limited to seniors and graduates who sign a pledge of $100, payable annually in ten equal installments.

The pledge notes and funds are held in trust. When the principal reaches the sum of $100,000, the Board of Administrators of the Fund may pay the University such sums as it may vote for the erection of buildings, acquisition of sites, maintenance, and purchase of equipment. At no time may money be drawn so as to leave a balance of less than $50,000 on deposit.

On request, the Alumni Office of the University will furnish pledge blanks to alumni.

THE COLUMBIAN WOMEN

The objects of this organization are (1) the promotion of acquaintanceship among its members; (2) the advancement of women by the founding of scholarships in the various departments of the University; and (3) the promotion of the interests of the University.

MEMBERSHIP

The following persons shall be eligible for active membership: (a) any woman who is currently registered or has been previously registered as a student in The George Washington University; (b) any woman member of the Faculties or Board of Trustees, any woman on the administrative staff; the wife of any member of the Faculties, Board of Trustees, or of the administrative staff; (c) any woman recipient of an honorary degree from the University.

1956–57

President.—Mary Magdalen Connelly, LL.B. 1922; 1830 17th Street NW., Washington, D. C.

First Vice President.—Virginia Randolph Kirkbride (B.S. 1941, A.M. 1942, University of Nebraska); 2120 G Street NW., Washington, D. C.

Second Vice President.—Emilie Margaret White, A.B. 1907, A.M. 1910; 3420 16th Street NW., Washington, D. C.

Treasurer and Corresponding Secretary.—Josephine Stambaugh; 200 Great Falls Street, Falls Church, Va.

Assistant Treasurer.—Margaret Gaddis Dutton, A.B. 1920, A.M. 1930; 1017 East Capitol Street, Washington, D. C.

Recording Secretary.—Ada Reed Entwisle, A.B. 1924; 3601 Connecticut Avenue NW., Washington, D. C.

Historian.—Hazel Smallwood Hanback, A.B. 1940; 2152 F Street NW., Washington, D. C.

THE WOMEN'S BOARD OF THE GEORGE WASHINGTON UNIVERSITY HOSPITAL

The object of this organization is to aid in every way the interests and advancement of the George Washington University Hospital. Meetings are held on the first Wednesday of each month, October to June, inclusive. Inquiries regarding membership should be addressed to the Corresponding Secretary, The George Washington University, Washington 6, D. C.

1955–56

President.—Mrs. Cloyd Heck Marvin
Vice President.—Mrs. Wilbur Carr
Vice President.— Mrs. Walter A. Bloedorn
Vice President.—Miss Grace Burton
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The George Washington University Hospital and Outpatient Department

THE SCHOOL OF MEDICINE
1956-57

THE

GEORGE WASHINGTON UNIVERSITY

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BY THE UNIVERSITY

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CALENDAR OF THE SCHOOL OF MEDICINE

1956–57

Date	Day	Occasion
1956:		
Sept. 11	Tuesday	Reexaminations for second, third, and fourth year students
Sept. 13	Thursday	Registration for the academic year 1956–57
Sept. 17	Monday	Academic year begins
Oct. 13	Saturday	Fall Convocation.
Nov. 12	Monday	Veterans Day. Holiday
Nov. 22–24	Thursday through Saturday	Thanksgiving recess
Dec. 20–Jan 2	Thursday through Wednesday	Christmas recess
1957:		
Jan. 3	Thursday	Classes resume
Jan. 19	Saturday	Last day of classes for the fall semester
Jan. 21–26	Monday through Saturday	Examination period
Jan. 28	Monday	Classes resume for the spring semester
Feb. 22	Friday	Winter Convocation. Holiday
April 19 and 20	Friday and Saturday	Easter recess
May 20–28	Monday through Tuesday	Examination period
June 2	Sunday	Baccalaureate
June 5	Wednesday	Commencement

THE BOARD OF TRUSTEES

The Board of Trustees of the University is composed of the President of the University ex officio and the following persons by election:

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* Nominated by the alumni.

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GEORGE BAIN JENKINS, M.D.
Professor Emeritus of Anatomy

WILLIAM JOHNSTON MALLORY, A.M., M.D.
Professor Emeritus of Medicine

JAMES FARNANDIS MITCHELL, A.B., M.D.
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GEORGE BYRON ROTH, A.B., M.D.
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• The Staff of Instruction listed here and at the head of each department is for the academic year 1955–56.

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The School of Medicine of The George Washington University was opened in March 1825; of the medical schools now in existence in the United States, it is the eleventh in chronological order of founding. The University Hospital and Dispensary were established in 1898 and made a part of the organization of the School.

The School is a member of the Association of American Medical Colleges and is one of the medical colleges which have been continuously approved by the American Medical Association. The degrees of the School of Medicine are recognized by all state examining boards.

PURPOSE AND AIMS

The purpose of the School of Medicine is to train physicians competent in the art and science of medicine, which includes general practice, further training for special practice, teaching, research, and medical administration.

On the undergraduate level the aims of the school are (1) to select for training students of superior aptitude and character; (2) to train students thoroughly in the theoretical principles and in the laboratory and clinical applications of the medical sciences; and (3) to provide a diversity of clinical experience with a wide range of clinical material through well supervised clinical clerkships in federal, public, and private hospitals providing facilities for all specialized fields of medicine.

The aims of the School of Medicine in the fields of graduate and postgraduate instruction are: (1) to provide interns and residents for a number of hospitals in the Washington area for advanced training in both general and specialized practice; (2) to direct an expanding program of fundamental and applied research, integrated with teaching at the School of Medicine, and in keeping with the increasing need for medical knowledge and the growth of Washington as one of the world's great centers of medical research; and (3) to provide postgraduate instruction in the most recent advances in research and in clinical medicine.

To achieve these objectives the School of Medicine has developed the systematic plan of instruction outlined below and a balanced, comprehensive curriculum. In carrying out its program the School seeks to maintain a faculty of appropriate size and outstanding ability, to make the most effective use of the expanding University facilities, and to take full advantage of the exceptional opportunities for clinical and research training in the Washington area.

ORIENTATION PROGRAM

A distinctive curricular feature of the George Washington University School of Medicine is a program for the orientation of students entering the School which is given to them during the first week of the regular academic year. The aims of the program are: (1) to acquaint the student with the School of Medicine and with the faculty of the School of Medicine; (2) to bridge the gap between premedical and medical education; (3) to indoctrinate the student in the responsibilities and ethical principles upon which medical practice rests; (4) to help the student get an effective start in his medical studies.

The orientation course is given because it is recognized that students find medical school quite different from their previous college experience. The language is different, the techniques are more detailed, and the demands upon the students in quality and quantity of work are far more exacting. It has been found helpful to point out to the students that if at times they feel the requirements are too rigorous, they are being trained for decisions which may mean suffering or well-being, life or death, for patients who ultimately will be under their care. The subjects covered in the orientation course include an interpretation of the student out-look, by the President of the current senior class; a discussion of the relationship between premedical and medical education, by a member of the Committee on Admissions, an introduction to the evaluation of scientific evidence; the history of the School of Medicine; an explanation of the medical curriculum by the Chairman of the Committee on Curriculum; an introduction to the Medical Library with guidance on how to use it, by the Chairman of the Library Committee; a statement of the ideals and aims of the medical profession by the Dean; a brief course in the history of medicine as related to the various pre-clinical and clinical subjects, by heads of departments; a lecture on the relationship of the physician and the law, by an eminent medical-legal authority; a discussion of medical ethics and the patient-physician relationship; explanation of student health program; a presentation of basic concepts of health and disease by a Professor of Medicine; and practical advice to the students on how to study, by a senior member of the faculty.

PLAN OF INSTRUCTION

The curriculum is a graded one beginning with fundamental aspects of the basic sciences and progressing gradually into the clinical teaching of the last two years. The teaching is organized systematically under the various departments of the School of Medicine as listed under Courses of Instruction in this CATALOGUE.

During the first year the student receives instruction in anatomy,

biochemistry, and physiology, using the classroom and laboratory facilities of the School of Medicine. In order to emphasize the importance of the basic sciences, patients are studied from time to time and the relationship of these fundamental sciences to the clinical sciences is stressed.

In the second year, having completed the preliminary study of the structure and function of the normal body, the mechanisms of disease are considered. The various bacteria and other microbiologic agents capable of producing disease are studied in the laboratory. The effects of various diseases upon the tissues of the human body are taught in pathology, serving as a basis for the understanding of disturbed structure and function. The mode of action of the various drugs and therapeutic agents is studied in the course in pharmacology as an introduction to the use of these agents in the treatment of patients. The student is taught to conduct a physical examination and to interpret and evaluate the various symptoms of disease. During the second half of this year patients are assigned to him for case study under the close supervision of his instructors. Introductory lectures in medicine, surgery, pediatrics, obstetrics and gynecology, neurology, radiology, and psychiatry are given during this period, preparing the student for his responsibility with patients in the hospital wards and clinics.

In the third year the student is assigned to the District of Columbia General Hospital for closely supervised clinical instruction. He serves as clinical clerk in the various divisions of the hospital and assists in the preparation of the clinical records and basic laboratory examinations. He learns to perform the common ward procedures and to use diagnostic and therapeutic equipment. During this period there are daily lectures and clinical demonstrations planned in an orderly fashion proceeding from simpler to more complex problems.

During the summer period following the third year the student is required to spend eight weeks in one of the various teaching facilities of the School of Medicine. This plan permits limited electives, so that the student may explore opportunities in the various specialties not ordinarily included in the medical curriculum.

In the fourth year the student spends most of his time in the study of ambulatory patients. This instruction is given in the clinics of the University Hospital, Children's Hospital, Mount Alto Hospital, Walter Reed General Hospital, and St. Elizabeths. In these various institutions members of the faculty continue to supervise the students in their evaluation of clinical problems by a careful review of each patient and joint planning of treatment procedures. Stress is placed upon the total individual and his environment, since it is recognized that many factors, emotional and economic as well as physical, contribute to disease and must be considered if the individual is to be restored to health and effectiveness. Instruction in the basic sciences is continued

in the fourth year in special conferences in which representatives of several departments of instruction participate.

By the completion of his four-year course the student must have demonstrated that he has acquired the basic knowledge and experience necessary for advanced training on the internship.

THE MEDICAL CURRICULUM

Subject	Lecture	Laboratory	Conference	Total
First Year				
Gross Anatomy	112	256	—	368
Embryology and Histology	48	96	—	144
Neuroanatomy	32	64	—	96
Biochemistry	76	180	32	288
Physiology	144	160	32	336
Disaster Medicine	16	—	—	16
Introduction to Medical Psychology	16	—	—	16
Psychopathology	16	—	—	16
Total	460	756	64	1,280
Second Year				
Bacteriology	64	144	16	224
Pathology	60	120	40	220
Pharmacology	80	80	24	184
Physical Diagnosis	16	96*	—	112
Psychiatry	16	96*	—	112
Clinical Microscopy	—	48	—	48
Medicine	80	—	—	80
Surgery	48	—	—	48
Hygiene	32	—	—	32
Pediatrics	32	—	—	32
Neurology	16	—	—	16
Obstetrics	16	—	—	16
Psychosomatic Disorders	16	—	—	16
Radiology	16	—	—	16
Total	492	584	80	1,156

* Practical exercises and/or clinics

Third Year

Subject	Lecture, Conference, or Clinic	Clerkship	Total
Anesthesiology	16	—	16
Clinico-pathological Conference	32	—	[illegible]
Dermatology and Syphilology	16	—	[illegible]
Health Resources Survey	3	—	[illegible]
Medical Jurisprudence	16	—	[illegible]
Medicine	16	240	[illegible]
Medical Laboratory	—	60	60
Neurology	—	60	168
Obstetrics and Gynecology	48	120	16
Ophthalmology	16	—	136
Pediatrics	16	120	12
Physical Medicine	12	—	16
Psychoneuroses	16	—	[illegible]
Surgery	29*	240	[illegible]
Surgical OPD and Orthopedics	—	60	[illegible]
Surgical OPD and Urology	—	60	10
Therapeutic Conference	16	—	
Total	252	960	1,212

Summer Clerkship

Medicine, Surgery, Obstetrics and Gynecology *or* Pediatrics—eight weeks between third and fourth years

Fourth Year

A) Lecture

Subject	Hours
Clinico-pathological Conference	27
Forensic Medicine	12
Medical Economics	14
Nutrition	8
Pediatrics	27
Public Health Practice	5
Surgical Anatomy	14
Surgical Pathology	8
Total	115

* Includes Fractures and Orthopedics, 16 hours.

B) Clerkship*

Division	Weeks
Medicine	9
Surgery	9
Obstetrics and Gynecology	6
Pediatrics	6
Cancer Clinic	3
Psychiatry	3
Total	36

Equipment and Facilities

The George Washington University Hospital.—The hospital, with a capacity of 400 beds, was opened in 1948. This splendid edifice, which is one of the outstanding hospitals in the United States, is completely furnished with the latest and most scientific apparatus and equipment. Its purpose is to supplement existing hospital resources in the District of Columbia for the care of the sick and the injured; to provide facilities for the education of physicians, nurses, and technicians; and to promote medical knowledge.

The hospital is staffed and controlled by the Faculty of the George Washington University School of Medicine and it provides excellent clinical material for the instruction of medical students. Virtually every specialty in the fields of medicine and surgery has assigned space and equipment in both the outpatient department and the bed-patient section of this modern institution.

Medical School Building.—The building housing the School of Medicine is a five-story structure with lecture rooms, classrooms, students' rooms, and the following laboratories: anatomy; bacteriology, hygiene, and preventive medicine; biochemistry; pathology; and pharmacology and physiology.

They are fully equipped to enable students to pursue adequately the laboratory courses and to acquire the technical skill necessary in modern clinical and investigative work.

Research Building.—The Research Building houses special laboratories for graduate and staff research in the Departments of Anatomy; Biochemistry; Pharmacology; Physiology; and Bacteriology, Hygiene, and Preventive Medicine. Special facilities are provided for the study of radio-active compounds, for tissue-culture techniques, and for virological procedures. Selected students are invited to participate in certain aspects of the research program either on a volunteer basis or with the support of special Research Scholarships.

On the first floor, the east wing is occupied by a modern medical li-

* A three-week elective may be substituted for part of the clerkship in the division where the summer clerkship was served.

brary; the west wing houses the administrative offices of the School of Medicine. The second floor is given over to the photographic laboratories and other facilities for audio-visual aids to education.

Medical Library.—The Medical Library contains a selected reference collection of more than 10,000 volumes, currently obtains important new medical works, and regularly receives the principal medical journals.

Inter-library loan service is maintained by close cooperation with other medical and scientific libraries throughout Washington and vicinity.

The Medical Library is open from 9:00 A.M. to 9:00 P.M. each day, Monday through Friday, and from 9:00 A.M. to 1:00 P.M. Saturday.

The Medical Library maintains a branch in Room 6037-A of the University Hospital for reference, research, and inter-library loan service. It is open from 2:00 to 6:00 P.M. Monday through Friday.

Government Libraries and Museums

The Armed Forces Institute of Pathology, on the grounds of Walter Reed Army Medical Center, affords unexcelled opportunity for study of conditions met in general medicine and surgery as well as those of peculiarly military significance. Its collection of anatomical and pathological specimens comprises material received from all areas of the world and is unequaled in this country. The Museum of Hygiene, the National Museum, the Smithsonian Institution, the Botanic Gardens, and the various collections of the Department of Agriculture all afford opportunity for study of materials of special interest in various areas of Medicine and its allied sciences.

Clinics

Students at the George Washington University School of Medicine receive clinical training at the University Hospital, at the new University Cancer Clinic, and at five affiliated hospitals. In the very first year the medical student begins his work in the hospital as well as in the lecture halls and classrooms.

The University Hospital—All clinics are under the supervision of the Dean, who is also Medical Director of the Hospital. This insures the highest possible utilization of available clinical material for teaching purposes and the proper supervision of clinicians and students; it brings the individual student into direct contact with patients and requires him to do, under authoritative supervision, the clinical and laboratory work necessary for diagnosis and treatment; and it permits proper interpretation of the conditions occurring during the progress of cases and promotes the keeping of adequate records. Clinical and clinico-pathological conferences are held in which the history of cases, the physical findings, labora-

tory records, and the post-mortem pathology when available, are presented and correlated.

The Outpatient Department.—The Outpatient Department has clinical facilities for each Service in the Hospital. Fourth-year students are assigned in rotation by section for clinical instruction in the Outpatient Department.

The George Washington University Cancer Clinic.—This modern building, opened in 1954, houses the Cancer Detection Clinic; the Helen L. and Mary E. Warwick Memorial; and special laboratories for research related to the nature, diagnosis, and treatment of cancer.

The facilities of the Cancer Detection Clinic are available to medical students. In addition the diagnosis and treatment of various forms of neoplasms are presented. The results of the treatment of neoplasms are evaluated by follow-up studies.

The Helen L. and Mary E. Warwick Memorial, for cancer and allied diseases, was affiliated with The George Washington University in July 1948. The purposes of this clinic are (1) to provide care for cancer patients, through group consultations within a cancer organization, and (2) to provide training for students and physicians in the field of oncology.

The District of Columbia General Hospital, Washington's large city hospital, has 1,420 beds and an outpatient department in which approximately 76,000 patient-visits are made each year. It provides clinical opportunities in virtually every branch of medicine and surgery.

Medical students receive clinical training in certain fields at the Walter Reed Army Hospital, one of the Armed Forces' outstanding teaching hospitals. Clinical experience in both medical and surgical subjects is also provided at the Mt. Alto Veterans Administration Hospital.

At Children's Hospital, one of the largest and best known hospitals for children in the United States, medical students receive training and clinical experience in Pediatrics, with both clinic and in-patient patients.

St. Elizabeths Hospital, which has recently celebrated the 100th anniversary of its founding, is one of the world's most famous mental hospitals. This hospital cares for 7,500 patients with virtually every known psychiatric and neurologic disorder. The George Washington University medical students begin their studies in psychiatry in their first year and these studies continue throughout the four years. Much of their clinical instruction in psychiatry and neurology is received at St. Elizabeths, and prominent psychiatrists and neurologists on the St. Elizabeths staff are members of the George Washington University School of Medicine faculty. Additional clinical experience in psychiatry

and neurology is gained by students at the George Washington University Hospital Psychiatric Department, in the Outpatient Department of the University Hospital, and special lectures and clinical work in child psychiatry are given in the Psychiatric Department of Children's Hospital.

ADMISSION

Ninety hours of credit applicable toward a degree in this University or another college of liberal arts and sciences are required for admission to the School of Medicine.

A semester hour represents one class hour or a minimum of two laboratory hours a week for a period of one semester of approximately sixteen weeks.

Premedical College Requirements

Ninety Credit Hours

1. Chemistry, sixteen semester hours as follows: (*a*) eight semester hours in general inorganic chemistry, of which at least four hours are laboratory work (qualitative analysis may be counted as general inorganic chemistry); (*b*) eight semester hours or a one-year college course of organic chemistry, including laboratory work.

2. Physics, eight semester hours, of which at least two hours are laboratory work. It is recommended that this course be preceded by one in trigonometry.

3. Biology, eight semester hours, of which at least four hours are laboratory work. This requirement may be satisfied by a course of eight semester hours in either general biology or zoology.

4. English composition and literature, six semester hours: the usual introductory college course or the equivalent. The student should develop facility in speaking and writing English.

5. Modern foreign language: a reading knowledge, preferably of French or German.

6. Electives. It is recommended that the remaining semester hours required include: comparative vertebrate anatomy, botany, and vertebrate embryology, qualitative and quantitative chemical analysis, social science and psychology.

Advanced Standing

A student who has satisfactorily completed one or two years at any other medical school approved by the American Medical Association, and who has the necessary preliminary educational requirements, may apply for advanced standing.

Application for Admission

1. Full directions for application will be furnished on request. The applicant should ask the registrar of each college previously attended to send an official transcript of record to the Director of Admissions, The George Washington University. Photostatic copies of credentials without the original signature of the certifying authority are not satisfactory. It is the responsibility of the applicant to see that all credentials are forwarded to the Admissions Office of the University.

2. Two recent photographs, with signatures, are required of each applicant.

3. As the number of qualified applicants for admission to the School each year far exceeds its capacity, the candidate for admission should secure from the colleges attended completely compiled premedical credentials and send them for evaluation well in advance of the semester for which he is applying.

4. Applicants for admission are urged to take the Medical College Aptitude Test of the Association of American Medical Colleges.

5. A fee of $5 to defray the costs of completing the records for final consideration for admission must accompany each application.

REGISTRATION

For the academic year 1956–57, registration will be conducted at the Medical School, 1335 H Street NW., from 10:00 A.M. to 4:00 P.M., September 15. Registration is for a period of one academic year.

FEES AND FINANCIAL REGULATIONS

The following fees have been adopted:

Tuition fee, for each academic year	$900.00
Fee for special examinations, for each subject	5.00
Graduation fee	20.00

Payment of Fees

Fees for each semester are $450.00, payable in advance.

All fees are payable at the Office of the Cashier of the University, 725 Twenty-first Street NW. Fees due must be paid at the time of registration; no student is permitted to complete registration or to attend classes until fees are paid.

Registration in the School of Medicine *is for a period of one academic year.* After the student has entered the courses of instruction he is obligated for the full tuition for the academic year. No part of the tuition will be refunded upon withdrawal or dismissal for any cause. Acceptance by the School of a student's fees does not in any way obligate

the School to accept the student for any subsequent year, and the right is reserved to drop any student from the School whenever, in the interest of the student or the School, the Faculty deems it advisable to do so.

Because the number of applicants far exceeds the limit of each class, places can be reserved only for those qualified applicants who remit a deposit of $100 which will be credited toward the tuition of the first semester. Under no circumstances will this deposit be refunded.

Credit for work will not be given until, at the completion of a laboratory course, the student has replaced or paid for all articles of equipment or other University property which he has lost, broken, or destroyed. All breakage or loss not directly traceable to an individual student is assessed pro rata.

Cost of Textbooks and Student Equipment

The minimum cost of necessary textbooks and student equipment (microscope, drawing materials, glass slides, clinical thermometer, stethoscope, hemocytometer, uniforms, etc.) is approximately as follows: first year, $400; second year, $250; third year, $125; fourth year, $80: total $855.

A fee of $1 a semester is charged for the use (optional) of a locker.

FELLOWSHIPS AND GRADUATE ASSISTANTSHIPS

The following fellowships and graduate assistantships are available. Applications should be submitted not later than April 1 preceding the period for which the award is to be made.

University Teaching Fellowships.—These are assigned for the academic year to the various departments of instruction. The applicant is expected to be a prospective candidate for a Doctoral degree, and to have a Master's degree or equivalent in the general field of his future doctoral study. Each Teaching Fellow receives an annual stipend (on a nine-month basis) of up to $1,350 plus full tuition for whatever schedule of study or research his fellowship duties permit him to carry. The University Teaching Fellow normally renders half-time service in classroom or laboratory assignments to the department of instruction directing his doctoral study. Application forms for these fellowships may be obtained from the executive officer of the department concerned.

Graduate Teaching Assistantships.—These are open in various departments of instruction to candidates for the Master's degrees. Each graduate teaching assistant renders a designated unit of service to his major department of instruction, and receives, depending upon his teaching or laboratory assignment, up to $1,215 on a nine-month basis plus tuition for the program of studies which the duties of his assistantship permit him to

carry. Application should be made to the executive officer of the department of instruction concerned.

Special Fellowships.—Special fellowships are supported by endowment, and are awarded to candidates or prospective candidates for the degree of Doctor of Philosophy of unusual promise and ability. The stipend is not fixed but varies in amount with the need of the individual receiving the award. In applying for one of these fellowships it is advantageous that the student appear personally for an interview with the Chairman and such other members of the Graduate Council as would be interested in the research investigations proposed. These fellowships include the Thomas Bradford Sanders Fellowships.

SCHOLARSHIPS AND PRIZES

Scholarships are awarded for two semesters unless otherwise specified and are credited in equal parts for each semester. Each holder must carry a full schedule of academic work during the period for which the scholarship is awarded. Applicants (except in the case of the Daughters of the American Revolution Scholarship and the Eugene and Agnes E. Meyer scholarships) must have established an academic record in courses at this institution, and should apply on prescribed forms which must be filed in the Office of the Chairman of the Committee on Scholarships not later than April 1 preceding the academic year for which the scholarship is to be awarded. Further information concerning the following scholarships may be obtained from the Chairman of the Committee on Scholarships.

Anna Bartsch Scholarship.—This scholarship, in the amount of $500, established in 1946 by Dr. Anna Bartsch-Dunne, as a memorial to her mother, Anna Bartsch, is available to a woman in the School of Medicine, "of outstanding scholarship, character, and promise, who intends to make the practice of medicine her life profession". The award is made upon the recommendation of the Faculty of the School of Medicine. For the year 1954–55 this scholarship was awarded to Kathryn Anne Williams.

Emma K. Carr Scholarships.—Six scholarships in the amount of $400 each and eight of $100 each, established in 1932 by Mrs. Emma K. Carr, are available to "young men (of the white race) for undergraduate or postgraduate work, considering character, capacity, and need".

Maria M. Carter Scholarship.—This scholarship in the amount of $100, established in 1871 by Mrs. Maria M. Carter, is available to a young man.

Isaac Davis Scholarship.—This scholarship, in the amount of $80, was established in 1869 by the Honorable Isaac Davis of Massachusetts. Nominations for the scholarship may be made "by the founder or his

eldest lineal descendant". In case no such nomination is made, the scholarship is to be awarded by the University.

Hazleton Scholarship.—This scholarship, in the amount of $300, established in 1950 by the bequest of Lillie S. Hazleton, is awarded annually "for the use and assistance of needy and worthy students".

Eugene and Agnes E. Meyer Scholarships.—A scholarship fund in the amount of $2,500, established in 1952 by the Eugene and Agnes E. Meyer Foundation, is available annually "to assist promising students or applicants in meeting the costs of furthering their education, with preferential consideration to children of persons who are employed in public service, including service in the armed forces or the judiciary."

John Ordronaux Prize.—This prize of $150 is awarded annually to the member of the graduating class of the School of Medicine who has completed the four-year medical course with the highest scholastic standing. In 1955–56 this prize was awarded to Virginia Anna Duggins

The Zonta Club of Washington, D. C., Scholarship.—This scholarship, in the amount of $300, offered by the Zonta Club of Washington, D. C., is available to a woman who is a senior or graduate student with special interest in a professional or business career.

Special Research Scholarships, supporting part-time work in the various departments, have been made available to selected medical students through grants by the Lederle Laboratories, the National Foundation for Infantile Paralysis, and the National Institutes of Health.

FINANCIAL AID

Internship

In memory of her mother, Anna Bartsch, Dr. Anna Bartsch-Dunne established in 1946 a fund which provides $15 a month to aid in the support of an internship in the University Hospital. This internship, awarded annually, was awarded for the year 1955–56 to Mary Ellen Holland.

Loan Funds

The following loan funds are available to students in the University in accordance with the qualifications placed thereon by the donors. Inquiries should be directed to the Office of the Treasurer.

University Loan Fund.—The Trustees of The George Washington University have established a loan fund.

Harris Loan Fund.—This fund, established by George W. Harris, is available for loan to an orthoptic technician student.

Kellogg Medical School Loan Fund.—The W. K. Kellogg Foundation

in Battle Creek, Michigan, has established a loan fund for students in the School of Medicine.

School of Medicine Loan Fund.—This fund, contributed by medical students, is available for loans to students in the School of Medicine.

Pfizer Medical School Loan Fund.—The Chas. Pfizer & Co., Inc., has established a fund for loans to students in the School of Medicine.

Henry Strong Educational Foundation.—The Henry Strong Educational Foundation, established at Chicago under the will of General Henry Strong, makes available a fund for loans to both men and women students under the age of twenty-five years.

Sutherland Medical School Loan Fund.—This fund, established by Mrs. Rose L. Sutherland, is available for loans to students in the School of Medicine.

REGULATIONS

Students in the School of Medicine are subject to, and are expected to familiarize themselves with, the general University regulations, stated in the University Catalogue.

Absence

Absence consists in being away from a class or clinic during a scheduled period, entering after the class or clinic has begun, or leaving before either is dismissed.

Excuse for absence due to sickness must be accompanied by a certificate signed by the attending physician and must be filed in the Office of the Dean.

For every unexcused absence a department will deduct one-half of one per cent from the student's final grade in the subject involved.

Grades

The following grading system is used *A* (90–100); *B* (80–89); *C* (75–79); *D* (65–74) condition; *E* (below 65) failure; *Inc.*, incomplete. The passing grade in each subject is *C*.

A student conditioned in any subject will not be advanced until such condition is removed and then only by authority of the Committee on Scholarship.

Examinations

Examinations, which may be written, oral, or practical, will be held at the end of each semester.

All students in the School of Medicine are required to take Part I and Part II of the National Board Examinations, except that students

from those states and foreign countries which do not recognize the National Board may be exempted from Part II by action of the Committee on Scholarship.

APPLICATION FOR GRADUATION

Application for a degree should be filed in the Office of the Registrar at the time of registration for the senior year.

RIGHT TO DISMISS STUDENTS

The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable to do so.

RIGHT TO CHANGE RULES

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

HEALTH ADMINISTRATION

The University maintains a health service that is primarily diagnostic in its intent. It also provides first aid in the event of an emergency.

Medical privileges include: (1) the physical examination of all entering students; (2) three visits by the University physician or surgeon, office or residence (District of Columbia) in any one illness, exclusive of a specialist, surgical operation, laboratory, or X-ray examination. (3) hospitalization, including board and nursing in the University Hospital for not more than one week during any twelve-month period—the necessity to be determined by the Director of Health Administration. The duration of hospitalization period (maximum, one week) is also to be determined by the Director of Health Administration.

This medical benefit does not apply to illness or disability incurred previous to the University semester or prior to payment of tuition fees.

The student is allowed, if he so desires, to engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

Rules: (1) The Director of Health Administration is empowered to limit or deny the medical benefits where, in his discretion, a student has, by his misconduct or breach of the rules of the University, made himself ineligible; (2) the Director of Health Administration has authority to determine the necessity and length of hospitalization; (3) a student who

has severed his connection with the University is ineligible for medical benefits.

Physical Examinations

All first-year students are given a comprehensive physical examination upon admission to the School of Medicine. The students are informed of the findings and advised regarding such measures as will tend to maintain a high standard of health.

In addition medical students benefit from the complete Tuberculosis Case Finding Program which the School has maintained since 1938–39. Under this program all students receive tuberculin tests, X-ray examinations, and such special attention from chest specialists as is necessary to reduce to a minimum the dangers from tuberculosis. Students are immunized against those diseases for which proven prophylactics exist.

LIVING ACCOMMODATIONS AND LIVING EXPENSES

Washington provides a wide variety of residential accommodations for students, rooms, apartments, and houses, furnished and unfurnished, at a wide range of rentals. Married students are eligible for various low rental housing projects. Single students frequently find they can live economically in small groups by sharing apartments. The cost of food, clothing, and other essentials in Washington is comparable to that in other cities.

Living Accommodations

Women Students.—The Hattie M. Strong Residence Hall provides single rooms at $35 a month and double rooms at $30 a month a person. Meals are served at the Student Union. Admission to the University does not include dormitory reservation. A separate application for a room should be made well in advance (for the fall semester by May first, for the spring semester by January first). Forms for application, together with detailed information, may be obtained from the Director of Activities for Women.

Girls under the age of twenty-one who are enrolled for twelve or more semester hours of academic work in the University and who are not living with their parents or relatives may live outside the dormitory only with the permission and approval of the Director of Activities for Women, upon receipt of written requests from parents. In no case will permission be granted for such girls to be domiciled outside the dormitory, except with persons approved by the Director of Activities for Women.

Men Students.—Welling Hall provides double room facilities for 102

students. Rooms rent for $24 a month a person. Dining facilities are available to all residents. Meals are also served at the Student Union. Application forms for reservations may be obtained from the Director of Activities for Men.

Information concerning private rooming and boarding facilities near the University for women students twenty-one years of age or older and for men students may be obtained at the Housing Office, Lisner Auditorium, 730 Twenty-first Street, NW. The reservation of rooms in private houses must be made by students.

RECREATION

The nation's capital provides abundant recreational resources, a large number of which are available at little or no cost. There are numerous art galleries, museums, concert halls, theaters, swimming pools, parks, and places of great historic interest. There are, in addition, the usual commercial recreation facilities found in a large city. Social activities are provided by student organizations of the University, the School of Medicine, and other student groups. Almost every religious faith is represented in Washington by one or more churches, and much spiritual, educational, social, and recreational activity is conducted by the various church groups. There are innumerable other cultural and educational facilities in Washington to meet almost any possible individual need or preference of a medical student and his family.

THE DEGREE OF DOCTOR OF MEDICINE

Upon the satisfactory completion of the requirements of the School of Medicine, the degree of Doctor of Medicine is conferred.

REQUIREMENTS FOR THE DEGREE

Every candidate for graduation with the degree of Doctor of Medicine must be at least twenty-one years of age, of reputable character, and free of all indebtedness to the University. He must have satisfied the admission requirements, completed satisfactorily not less than four academic years of study as a matriculated student in Medicine, completed all required courses, and passed satisfactorily all prescribed examinations.

Combined Arts and Medicine Curriculum

In order to be recommended for the degree of Bachelor of Arts, the candidate must complete at least ninety semester hours of prescribed college work (at least thirty hours and one year of residence

must be completed in Columbian College, the senior liberal arts college), and the first year of the medical curriculum. Upon satisfactory completion of the fourth year of the medical curriculum the student becomes eligible for the degree of Doctor of Medicine.

Honors

A candidate who has completed the four-year medical course with an average grade of *A* may be recommended for graduation "with distinction."

HONOR SOCIETIES

William Beaumont Medical Society.—Medical students showing unusual ability are elected by the active members of this society, which was founded to encourage and stimulate individual investigation.

Howard Kane-A. F. A. King Obstetrical Society.—The fifteen students in the third and fourth year classes who maintain the highest grades in their work in obstetrics are eligible for membership.

Smith-Reed-Russell Society.—Students of the third and fourth years who maintain a scholastic average of 88 per cent are eligible for membership.

Alpha Omega Alpha.—National Honor Medical Society. Members of the Junior and Senior Classes meeting the qualifications specified by the constitution of the Society are eligible for election to membership.

INTERN AND RESIDENT TRAINING PROGRAM

The George Washington University Hospital offers rotating-type internships as classified by the National Intern Matching Program, Inc. Twenty-five internships of one year each are offered; thirteen in the Department of Medicine with emphasis on medicine, ten in the Department of Surgery with emphasis on Surgery, and two in the Department of Pathology with emphasis on pathology.

Rotating Internships, Emphasis on Medicine.—Interns will be assigned to seven months of general medicine, two months on the surgical service, and one month each on neuro-psychiatry, pediatrics, and obstetrics and gynecology.

Rotating Internships, Emphasis on Surgery.—Interns will be assigned to the surgical service for nine months, to general medicine for two months, and to obstetrics and gynecology for one month.

Rotating Internships, Emphasis on Pathology.—Interns will be assigned to the pathology service for six months, to general medicine for two months, to surgery for two months, to pediatrics for one month, and to obstetrics for one month.

A total of approximately forty-two approved residencies are offered in anesthesiology, cardiac diseases, internal medicine, neurologic surgery, obstetrics-gynecology, oral surgery, pathology, physical medicine, psychiatry, roentgenology, surgery and thoracic surgery. Residency programs are of from one to four years depending upon the service. Appointments are for one year subject to renewal. In several of the fields there are affiliations with local and government hospitals.

Fellowships of one or two years are available to acceptable candidates in anesthesiology, cardiology, chest diseases, infectious diseases, outpatient service, physical medicine, rheumatic diseases, surgery and thoracic surgery.

For application blanks and further information, address the Superintendent, The George Washington University Hospital, Washington 7, D. C.

POSTGRADUATE INSTRUCTION

The School of Medicine offers annually a series of short intensive postgraduate courses, varying somewhat from year to year. The series is designed for physicians in practice. The significant advances in the various specialties are presented, together with summaries of older information.

The Kellogg Medical Lectures, inaugurated in 1948, are a series of evening lectures and clinics, presented by distinguished physicians from other cities, designed primarily for physicians practicing in Washington and the vicinity. They are also attended by the Faculty, postgraduate students, and members of the senior class of the School of Medicine.

During the academic year 1953–54 approximately 168 physicians were enrolled in postgraduate courses. For application blanks and further information, address the Director of Postgraduate Instruction, The George Washington University Hospital, Washington 7, D. C.

MEDICAL TECHNOLOGIST COURSE

The course for medical technologists consists of twelve consecutive months of didactic and practical work in all phases of clinical laboratory technique. The course meets the full requirements of the Registry of Medical Technologists of the American Society of Clinical Pathologists. Prerequisites are 60 semester hours (two academic years) of college work including required credits in biology and chemistry.

Two classes are accepted each year, one entering in September and the other in March. Enrollment in each class is strictly limited so that personal instruction can be given.

Upon satisfactory completion of the course a certificate is awarded

and the candidate is eligible for the certifying examination given by the Registry of Medical Technologists.

For application blanks and further information, address the Director of Laboratories, The George Washington University Hospital, Washington 7, D. C.

COURSES OF INSTRUCTION

On the following pages of this BULLETIN, under the alphabetically arranged names of the departments of instruction, are listed the courses of instruction offered by the School of Medicine. The School of Medicine serves other divisions of the University by making available to nonmedical students certain undergraduate and graduate courses in the following fields: Anatomy, Bacteriology, Biochemistry, Pathology, Pharmacology, Physical Medicine, and Physiology. The courses listed are subject to some slight change. The University reserves the right to withdraw any course announced.

EXPLANATION OF COURSE NUMBERS AND SYMBOLS

The number which precedes the name of a course indicates the semester of the academic year in which the course is offered. An odd number indicates that the course is offered in the fall semester; an even number, that it is offered in the spring semester; and a double number (e.g., 343-44), that it begins in the fall semester and continues in the spring.

A number in parenthesis after the name of a course, indicates number of semester hours of credit which may be earned by nonmedical students.

First-year courses are numbered from 101 to 200; second-year courses, from 201 to 300; third-year courses, from 301 to 400; and fourth-year courses, from 401 to 500.

Courses offered in the School of Medicine for nonmedical students.—Courses numbered from 101-200 are planned for upper-division students in undergraduate curricula. They may be credited toward higher degrees only when registration for graduate credit has been approved at the beginning of the course by the dean responsible for the graduate work and by the officer of instruction, and when the completion of additional work has been certified by the officer of instruction. Courses numbered from 201 to 300 are planned for graduate students.

ANATOMY

Ira Rockwood Telford, Ph.D., *Professor of Anatomy, Executive Officer*
Webb Edward Haymaker, M.D., M.S., *Professorial Lecturer in Anatomy*
Paul Calabrisi, Ph.D., *Associate Professor of Anatomy*
Gerald Fred Hungerford, Ph.D., *Assistant Professor of Anatomy*
Frank Duane Allan, Ph.D., *Assistant Professor of Anatomy*
Thomas Nick Johnson, Ph.D., *Assistant Professor of Anatomy*
Dora Papara-Nicholson, M.D., *Assistant Research Professor of Anatomy*
Wilfred Walter Eastman, B.S., M.D., *Clinical Instructor in Anatomy*
Lloyd Eugene Church, D.D.S., M.S., *Clinical Instructor in Anatomy*
Raymond Nathan Brown, M.D., *Clinical Instructor in Anatomy*
Lysle Westley Williams, A.B., M.D., *Clinical Instructor in Anatomy*
John Watt, Jr., B.S., M.D., *Clinical Instructor in Anatomy*
Herbert Koro Kashiwa, M.S., *Fellow in Anatomy*

101–2 *Gross Anatomy* — Calabrisi and Staff

Regional dissection of the human body, supplemented with lectures and quiz sections. Study of X-ray anatomy to emphasize the functional aspects of the position, shape, and relation of the viscera and skeletal components. Eighteen hours a week, fall semester, nine hours a week, spring semester.

103 *Human Embryology* — Allan and Staff

The origin and development of the human body. Special emphasis on the value of embryology in interpreting anatomical anomalies and variations as seen in gross dissection, surgery, obstetrics, and pathology. Three hours a week.

104 *Neuroanatomy* — Johnson and Staff

The macroscopic and microscopic study of the central nervous system and the special sense organs. Emphasis on such dynamic aspects as development, pathways, lesions, etc. Six hours a week.

105 *Microscopic Anatomy* — Telford and Staff

Study of the detailed minute structure of cells, tissues, and organs of the human body, with emphasis on the relation of structure to function. Recognition and interpretation of histological sections tested by practical examinations. Six hours a week.

201–2 *Gross Anatomy (Staff)* — Calabrisi and Staff

For qualified non-medical graduate students. Same as Anatomy 101–2. Anatomy 201—laboratory fee, $20; Anatomy 202—laboratory fee, $15. Time to be arranged.

203 *Human Embryology* (2) — Allan and Staff
For qualified non-medical graduate students. Same as Anatomy 103. Laboratory fee, $7. Time to be arranged.

204 *Neuroanatomy* (4) — Johnson and Staff
For qualified non-medical graduate students. Same as Anatomy 104. Laboratory fee, $12. Time to be arranged.

205 *Microscopic Anatomy* (4) — Telford and Staff
For qualified non-medical graduate students. Same as Anatomy 105. Laboratory fee, $12. Time to be arranged.

221–22 *Seminar* (1–1) — The Staff
Reports and discussions of special topics by the Staff and graduate students. For graduate liberal arts students. Regular medical students are encouraged to attend. One hour a week. Time to be arranged.

295–96 *Research* (arr.) — The Staff
Time, credits, and fees to be arranged.

299–300 *Thesis* (3–3) — The Staff

ANESTHESIOLOGY

Charles Seymour Coakley, M.D., *Professor of Anesthesiology, Executive Officer*

Donald Harrison Stubbs, A.M., M.D., *Clinical Professor of Anesthesiology*

Seymour Alpert, A.B., M.D., *Associate Professor of Anesthesiology*

Cunningham Ramsey MacCordy, M.D., *Instructor in Anesthesiology*

Harold Norris Eccleston, Jr., M.D., *Instructor in Anesthesiology*

Salomon Naphtali Albert, A.B., M.D., D.A., *Clinical Instructor in Anesthesiology*

William Eldrige Bageant, M.D., *Clinical Instructor in Anesthesiology*

Allen Widome, M.D., *Clinical Instructor in Anesthesiology*

Paula Reines Kaiser, M.B., Ch.B., M.D., *Fellow in Anesthesiology*

Francisco Navarro Aguilar, M.D., *Assistant in Anesthesiology*

John Stephen Boling, B.S., M.D., *Assistant in Anesthesiology*

Hazel Norma Peisley, M.D., *Assistant in Anesthesiology*

Chirapan Sukannhaketu, M.D., *Assistant in Anesthesiology*

320 *Anesthesiology* — The Staff

Review of basic sciences, correlation between basic sciences and clinical work. One hour a week.

421–22 *Anesthesia Seminar* — The Staff

Students attend anesthesia seminars during their surgical clinical clerkships. One hour a week. University Hospital.

433–34 *Advanced Anesthesiology* — The Staff

Students are rotated through the work of the department for a period of one week and assigned to work in the operating rooms and to attend conferences and seminars. For the more advanced students a three-week elective is offered.

BACTERIOLOGY, HYGIENE, AND PREVENTIVE MEDICINE

Leland Wilbur Parr, Ph.D., *Professor of Bacteriology, Executive Officer*
Angus MacIvor Griffin, Ph.D., *Professor of Bacteriology*
Ralph Gregory Beachley, M.D., Dr.P.H., *Adjunct Professor of Public Health Practice*
Mary Louise Robbins, Ph.D., *Associate Professor of Bacteriology*
William Gray McCarten, M.S., *Assistant Professor of Bacteriology*
Rudolph Hugh, Ph.D., *Assistant Research Professor of Bacteriology*
Charles Francis McCaffrey, M.D., *Clinical Instructor in Preventive Medicine and Public Health*
Vernon Jack Fuller, M.S., *Sanders Fellow in Bacteriology*
William Donald Hann, B.S., *Fellow in Bacteriology*
Andrew John Vargosko, Jr., B.S., *Fellow in Bacteriology*

Special Lecturers

Chester Wilson Emmons, Ph.D., *Chief, Medical Mycology Unit, Laboratory of Infectious Diseases, National Microbiological Institute, National Institutes of Health;* Medical Mycology

Willard Hull Wright, D.V.M., Ph.D., *Chief, Laboratory of Tropical Diseases, National Microbiological Institute, National Institutes of Health;* Medical Zoology

John Roderick Heller, Jr., B.S., M.D., *Director, National Cancer Institute, National Institutes of Health;* Cancer Control

Robert Carter Cook, *Director, Population Reference Bureau; Editor, Journal of Heredity;* Medical Genetics

Robert Hanna Felix, M.D., M.P.H., *Director, National Institute of Mental Health, National Institutes of Health;* Mental Hygiene

Francis Byron Gordon, Ph.D., M.D., *Head, Virology Division, Naval Medical Research Institute, Naval Medical Center;* Virology

Edward Kramer Funkhouser, B.S., *Executive Secretary, District of Columbia Tuberculosis Association;* Community Health Resources

Samuel Jacob Ajl, Ph.D., *Chief, Microbiological Chemistry, Department of Bacteriology, Army Medical Service Graduate School,* Microbiological Chemistry

Sarah Bishop Brooks, R.N., B.S. in P.H.N., *Director, Division of Public Health Nursing, Arlington County Health Department;* Public Health Practice

Martin Marc Cummings, B.S., M.D., ***Chief, Research and Education Service, Department of Medicine and Surgery, Veterans Administration:*** Medical Bacteriology

112 *General Bacteriology* (4) Robbins
For nonmedical students. A study of the fundamentals of bacteriology, including hygienic applications. Methods of cultivation and control of several groups of microorganisms are studied in the laboratory. Prerequisite: any biological laboratory science; Chemistry 11–12. Laboratory fee, $12. Mon., Wed., and Fri., 9:10 to 12:00 A.M.

209 *Medical Microbiology* (1–11) Parr, Griffin
Bacteria, rickettsia, viruses, yeasts, molds, protozoa, and metazoa which relate to the health and diseases of man—cultural study of most important forms; methods of diagnosis by microscopic, cultural, immunologic, and animal reactions; theory and methods of immunology; vaccines; serums; antibiotics. Open to suitably prepared graduate students; may be elected as a whole or in part by adding the appropriate letter to the course number, with credit allocated as follows: (a) *Bacteriology*, including rickettsia and viruses—lecture (4), laboratory (3); (b) *Parasitology*, including medical mycology—lecture (2), laboratory (1); (c) *Immunology* (1). May be taken by a limited number of candidates for Master's degrees. Laboratory fee, $4 for each semester hour of laboratory work. Time to be arranged.

210 *Fundamentals of Epidemiology and Public Health* (2) Parr and Staff
Sources, modes, and implications of infection and injury. Consideration also given the problems of accidents and industrial medicine. Open to liberal arts graduate students. Prerequisite: Bacteriology 112 or 209. Mon., 2:00 to 4:00 P.M.

219–20 *Advanced Microbiology* (arr.) Griffin and Staff
Special study of advanced methods and current problems in microbiology for suitably qualified students specializing in microbiology. Prerequisite: Bacteriology 112 or 209; Chemistry 151–52 or the equivalent; permission of the instructor. Laboratory fee, $4 a semester hour. Time and credits to be arranged.

229 *Virology* (6) Robbins
Study of viruses and rickettsiae. Lectures and laboratory exercises. For liberal arts graduate students. Prerequisite: Bacteriology 112 or 209, and permission of the instructor. Laboratory fee, $15. 1956–57 and alternate years. Time to be arranged.

230 *Statistics in Microbiology* (3) Griffin
The application of statistical methods to the problems of microbiology. For liberal arts graduate students. Prerequisite: entrance or elementary college algebra. 1955–56 and alternate years. Time to be arranged.

232 *Immunological Methods* (3) McCarten
Preparation and testing of serological materials. Demonstration of basic serological phenomena. For liberal arts graduate students. Pre-

requisite: Bacteriology 112 or 209 and permission of the instructor. Laboratory fee, $10. 1956–57 and alternate years.

240 *Advanced Epidemiology and Public Health* (3) Part
Conferences, readings, and problems for graduate students dealing with specialized and advanced phases of the topics presented in Bacteriology 210. Prerequisite: Bacteriology 210. 1955–56 and alternate years. Time to be arranged.

293–94 *Staff Seminar* (1–1) The Staff
For liberal arts graduate students. Bi-weekly throughout the year. Time to be arranged.

295–96 *Research in Bacteriology* (arr.) The Staff
Time and credits to be arranged.

299–300 *Thesis* (3–3) The Staff

340 *Health Resources Survey* Beachley and Staff
A survey of complete medical care from first contact, through laboratory and clinical diagnosis, adequate medical or surgical treatment to full family and community rehabilitation. Case histories assigned junior students with the cooperation and assistance of the clinical departments. Comparison is to be made between care in near-indigent facilities and care in facilities where the student might begin his practice. Emphasis is on coordination of the private practice of medicine and community public health and welfare activities, both tax supported and voluntary. Throughout the holistic point of view is assumed. One hour a week for three weeks and independent research during summer.

401 *Public Health Practice* Beachley and Staff
Study of public health practice at national, state, city, and county levels. Public and private agencies. One hour a week for five weeks.

BIOCHEMISTRY

Joseph Hyram Roe, Ph.D., *Professor of Biochemistry, Executive Officer*
Carleton Raymond Treadwell, Ph.D., *Professor of Biochemistry*
Bernard Leonard Horecker, Ph.D., *Professorial Lecturer on Enzymes*
William Robert Carroll, Ph.D., *Professorial Lecturer on Proteins
Benjamin Williams Smith, Ph.D., *Assistant Professor of Biochemistry*
Robert Allen Clayton, Ph.D., *Assistant Professor of Biochemistry*
Klaus Schwarz, M.D., *Associate in Biochemistry*
Harold William Clark, Jr., Ph.D., *Associate in Biochemistry*
George Vartkes Vahouny, M.S., *Sanders Fellow in Biochemistry*
Archie Lee Smith, B.S., *Fellow in Biochemistry*
James Henry Wood, Jr., B.S., *Sanders Fellow in Biochemistry*

113–14 *Biochemistry* — Roe and Staff
Physiological and clinical chemistry. Two lectures, one conference hour and two three-hour laboratory periods a week.

221–22 *Biochemistry* (4–4) — Treadwell
A lecture and laboratory course for nonmedical students. Prerequisite: Chemistry 22 and 152. Material fee, $14 a semester. Tues. and Thurs., 9:00 to 12:00 A.M. and 1:00 to 2:00 P.M.

224 *Biochemistry of the Enzymes* (1) — Horecker
Lecture course dealing with the biochemistry of the enzymes and enzyme reactions. Prerequisite: Biochemistry 113 or 221. Mon., 5:00 P.M.

225–26 *Biochemical Procedures* (3–3) — Smith, Clayton
For liberal arts graduate students. Material fee, $15 a semester. Time to be arranged.

227–28 *Biochemistry Seminar* (1–1) — Roe
The current literature in the field of biochemistry, mainly for graduate students, but open to a limited number of specially qualified medical students. Fri., 4:00 P.M.

232 *Proteins and Amino Acids* (1) — _____
A lecture course for liberal arts graduate students. Prerequisite: Biochemistry 113 or 221. Wed., 5:00 P.M.

251 *Carbohydrate Metabolism* (1) — Roe
A lecture course. Prerequisite: Biochemistry 114 or 222. 1956–57 and alternate years. Sat., 9:00 A.M.

261 *Biochemistry of the Lipids* (1) — Treadwell
A lecture course. Prerequisite: Biochemistry 114 or 222. 1955–56 and alternate years.

* On leave of absence 1955–56.

271 *Advanced Carbohydrate Chemistry* (1) — Clayton
A lecture course. Prerequisite: Biochemistry 114 or 222. 1955–60 and alternate years. Wed., 5:00 P.M.

295–96 *Research in Biochemistry* (arr.) — Roe, Treadwell
Time and credits to be arranged.

299–300 *Thesis* (3–3) — Roe, Treadwell

DERMATOLOGY AND SYPHILOLOGY

Harry Ford Anderson, M.D., *Professor of Dermatology and Syphilology, Executive Officer*

George William Creswell, A.B., M.D., *Assistant Clinical Professor of Dermatology and Syphilology*

Hayden Kirby-Smith, B.S., M.D., *Assistant Clinical Professor of Dermatology and Syphilology*

Theodore Claremont Chen Fong, M.D., *Associate in Dermatology and Syphilology*

James Quincy Gant, Jr., M.S., M.D., *Associate in Dermatology and Syphilology*

Wendell Melvin Willett, M.D., *Associate in Dermatology and Syphilology*

Reuben Goodman, M.D., *Associate in Dermatology and Syphilology*

313–14 *Dermatology and Syphilology* — The Staff

Lectures on diseases of the skin and syphilis. One hour a week.

317–18 *Clinic* — The Staff

Case demonstrations, diagnosis, and treatment of skin diseases and syphilis. D. C. General Hospital.

407–8 *Clinic* — The Staff

Dermatology and syphilology in infants and children. Two hours a week. Childrens Hospital.

409–10 *Clinic* — The Staff

Clinical demonstrations, diseases of the skin. Two hours a week. University Hospital.

MEDICINE

Walter Andrew Bloedorn, A.M., M.D., Sc.D., *Professor of Medicine*
Thomas McPherson Brown, A.B., M.D., *Professor of Medicine, Executive Officer*
Charles Robert Lee Halley, A.B., M.D., *Clinical Professor of Medicine*
Clayton Bernard Ethridge, M.D., *Clinical Professor of Medicine*
Louis Katz Alpert, B.S., M.D., *Clinical Professor of Medicine*
Sol Katz, B.S., M.D., *Adjunct Clinical Professor of Medicine*
Joseph Francis Fazekas, B.S., M.D., *Adjunct Clinical Professor of Medicine*
Harry Eagle, A.B., M.D., *Professorial Lecturer in Medicine*
Robert William Berliner, B.S., M.D., *Professorial Lecturer in Medicine*
Henry Field, Jr., M.D., *Professorial Lecturer in Medicine*
John Coleman Nunemaker, M.S., M.D., *Professorial Lecturer in Medicine*
Monroe James Romansky, A.B., M.D., *Associate Professor of Medicine*
John McCallum Evans, A.B., M.D., *Associate Professor of Medicine*
Peter Diacoumis Comanduras, B.S., M.D., M.S. in Med., *Associate Clinical Professor of Medicine*
Clarence Richard Hartman, A.B., M.D., *Associate Clinical Professor of Medicine*
Walter Kendall Myers, B.S., M.D., *Assistant Clinical Professor of Medicine*
John Alton Reed, A.B., M.D., *Assistant Clinical Professor of Medicine*
Theodore Judson Abernethy, B.S., M.D., *Assistant Clinical Professor of Medicine*
William Travis Gibb, Jr., A.B., M.D., *Assistant Clinical Professor of Medicine*
Roy Hertz, Ph.D., M.D., *Assistant Clinical Professor of Medicine*
Alfred Henry Lawton, M.D., Ph.D., *Assistant Clinical Professor of Medicine*
Samuel Ross Taggart, M.D., *Assistant Clinical Professor of Medicine*
Benjamin Manchester, M.D., *Assistant Clinical Professor of Medicine*
Pearl Holly, M.S., M.D., *Assistant Clinical Professor of Medicine*
James Joseph Feffer, A.B., M.D., *Assistant Clinical Professor of Medicine*
John Watkins Trenis, A.B., M.D., *Assistant Clinical Professor of Medicine*

Albert David Kistin, A.M., M.D., *Assistant Clinical Professor of Medicine*
Andrew Gabriel Prandoni, B.S., M.D., *Assistant Clinical Professor of Medicine*
Ruth Hechler Wichelhausen, M.D., *Assistant Clinical Professor of Medicine*
Ludwig George Lederer, M.D., Ph.D., *Assistant Clinical Professor (Research) of Medicine*
John Eldrid Smith, A.B., M.D., *Assistant Clinical Professor (Research) of Medicine*
Lawrence Elias Putnam, A.B., M.D., *Assistant Clinical Professor of Medicine*
Maurice Protas, A.B., M.D., *Associate in Medicine*
John Minor, A.B., M.D., *Associate in Medicine*
Lawrence Jay Thomas, B.S., M.D., *Associate in Medicine*
Bernard Lauriston Hardin, Jr., A.B., M.D., *Associate in Medicine*
Charles William Ordman, A.B., M.D., *Associate in Medicine*
Benjamin Calloway Jones, Jr., A.B., M.D., *Associate in Medicine*
Richard Bernard Castell, A.B., M.D., *Associate in Medicine*
Myer Harold Stolar, B.S., M.D., *Associate in Medicine*
Sam Thompson Gibson, B.S., M.D., *Associate in Medicine*
Walter Lewis Nalls, B.S., M.D., *Associate in Medicine*
Alfred Brigulio, M.D., *Associate in Medicine*
Halla Brown, M.D., *Associate in Medicine*
Ralph Bretney Miller, A.B., M.D., *Associate in Medicine*
Thomas Stone Sappington, A.B., M.D., *Associate in Medicine*
John Christian Ransmeier, A.B., M.D., *Associate in Medicine*
Samuel Jacob Nathan Sugar, Phar.G., M.D., *Associate in Medicine*
Joseph Ney, B.S., M.D., *Associate in Medicine*
Joseph Beinstein, A.B., M.D., *Associate in Medicine*
Frank Solomon Bacon, B.S., M.D., *Associate in Medicine*
Henry Dunlop Ecker, B.S., M.D., *Associate in Medicine*
Jack Jacob Rheingold, A.B., M.D., *Associate in Medicine*
Irene Gorski Tamagna, M.D., *Associate in Medicine*
Elizabeth Harman Hill, M.D., *Associate in Medicine*
John Bayne Marbury, M.D., *Associate in Medicine*
Louis Ross, M.D., *Associate in Medicine*
Frederic Dunbar Chapman, A.B., M.D., C.M., *Associate in Medicine*
John Wilmer Latimer, Jr., M.D., *Associate in Medicine*
Luther Henry Snyder, A.B., M.D., *Associate in Medicine*
Charles Wilson Jones, A.B., M.D., *Associate in Medicine*
Thomas Joseph Pekin, B.S., M.D., *Associate in Medicine*
Robert George Taylor, M.D., *Associate in Medicine*
Charles Waters Thompson, M.D., *Associate in Medicine*

James Walling Long, M.D., *Associate in Medicine*
Eugene Solomen Gladsden, B.S., M.D., *Associate in Medicine*
Maurice Mensh, M.D., *Associate in Medicine*
Arthur Rosenbaum, B.S., M.D., *Associate in Medicine*
Jarvis Edwin Seegmiller, A.B., M.D., *Associate in Medicine*
Irvin Kerlan, B.S., M.D., C.P.H., *Associate in Medicine*
Virginia Patterson Beelar, A.B., M.D., *Associate in Medicine*
Lester Sylvan Blumenthal, A.B., M.D., M.S. in Med., *Associate in Medicine*
Stanley William Kirstein, B.S., M.D., *Associate in Medicine*
James Francis Ambury, B.S., M.D., *Associate in Medicine*
Robert Norwood Coale, B.S., M.D., *Associate in Medicine*
Israel Kessler, M.S., M.D., *Associate in Medicine*
Francis James Murray, B.S., M.D., *Associate in Medicine*
Edwin Pearson Parker III, B.S., M.D., *Associate in Medicine*
Morris Hirsh Rosenberg, A.B., M.D., *Associate in Medicine*
John William Du Chez, M.D., *Associate in Medicine*
Warren Daniel Brill, B.S., M.D., *Associate in Medicine*
Marvin Fuchs, B.S., M.D., *Associate in Medicine*
William Jack Weaver, Jr., A.B., M.D., *Associate in Medicine*
Ruth Boschwitz Benedict, A.B., M.D., *Associate in Medicine*
Thomas James Kennedy, Jr., B.S., M.D., *Associate (Research) in Medicine*
Adrian Michael Hogben, M.D., Ph.D., *Associate (Research) in Medicine*
Jack Orloff, M.D., *Associate (Research) in Medicine*
Ernest Cotlove, B.S., M.D., *Associate (Research) in Medicine*
James Irving Boyd, M.D., M.S., *Lecturer in Medicine*
James Theodore Burns, M.D., *Clinical Instructor in Medicine*
Charles Edward Law, M.D., *Clinical Instructor in Medicine*
Emil Herbert Bauersfeld, A.B., M.D., *Clinical Instructor in Medicine*
William Otis Bailey, Jr., M.D., *Clinical Instructor in Medicine*
Harry Clark Bates, B.S., M.D., *Clinical Instructor in Medicine*
Jeanne Cecile Bateman, A.B., M.D., *Clinical Instructor in Medicine*
Thomas Lees Hartman, A.M., M.D., *Clinical Instructor in Medicine*
Boris Rabkin, A.B., M.D., *Clinical Instructor in Medicine*
Morton Harold Rose, M.D., *Clinical Instructor in Medicine*
George Sharpe, A.B., M.D., *Clinical Instructor in Medicine*
Cyril Augustus Schulman, B.S., M.D., *Clinical Instructor in Medicine*
Louis Aleck Craig, Jr., A.B., M.D., *Clinical Instructor in Medicine*
Abraham Wolffe Danish, A.B., M.D., *Clinical Instructor in Medicine*
Milton Gusack, A.B., M.D., *Clinical Instructor in Medicine*
William Lewis, M.D., *Clinical Instructor in Medicine*
Alvin Seltzer, B.S., M.D., *Clinical Instructor in Medicine*
Adolph Friedman, A.B., M.D., *Clinical Instructor in Medicine*

Samuel Dennis Loube, A.B., M.D., *Clinical Instructor in Medicine*
Alvin Edward Parrish, M.D., *Clinical Instructor in Medicine*
Nahum Raphael Shulman, M.D., *Clinical Instructor in Medicine*
Stewart William Bush, B.S., M.D., *Clinical Instructor in Medicine*
Alfred Baer, A.B., M.D., *Clinical Instructor in Medicine*
Jack Kleh, A.B., M.D., *Clinical Instructor in Medicine*
James William Hollingsworth, M.D., *Clinical Instructor in Medicine*
Edward Luke Rea, A.B., M.D., *Clinical Instructor in Medicine*
William Robert Felts, Jr., B.S., M.D., *Clinical Instructor in Medicine*
James Packard Mann, M.D., *Clinical Instructor in Medicine*
Maurice Arthur Sislen, A.B., M.D., *Clinical Instructor in Medicine*
William Holmes Crosby, Jr., A.B., M.D., *Clinical Instructor in Medicine*
Joseph Hicks Watson, B.S., M.D., *Clinical Instructor in Medicine*
Conrad Gossels, M.D., *Clinical Instructor in Medicine*
Charles Joseph Savarese, Jr., A.B., M.D., *Clinical Instructor in Medicine*
James Eliot Chapman, M.D., *Clinical Instructor in Medicine*
Bernard Robert Cooperman, A.B., M.D., *Clinical Instructor in Medicine*
Marshall Hannis Jacobson, A.B., M.D., *Clinical Instructor in Medicine*
Gottfried Karl Duschak, M.D., *Clinical Instructor in Medicine*
Norman Hartley Rubenstein, M.D., *Clinical Instructor in Medicine*
Franklin Gesstord Ebaugh, Jr., A.B., M.D., *Clinical Instructor in Medicine*
Leonard Laster, A.B., M.D., *Clinical Instructor in Medicine*
Howard Otis Mott, A.B., M.D., *Clinical Instructor in Medicine*
Max Gimble Sherer, M.S., M.D., *Clinical Instructor in Medicine*
Jesse Leonard Steinfeld, B.S., M.D., *Clinical Instructor in Medicine*
Donald Morgan Watkin, A.B., M.D., *Clinical Instructor in Medicine*
James Barnes Wyngaarden, M.D., *Clinical Instructor in Medicine*
Paul Alan Marks, A.B., M.D., *Clinical Instructor in Medicine*
Edward Adelson, B.S., M.D., *Clinical Instructor in Medicine*
Kurt Julius Isselbacher, M.D., *Clinical Instructor in Medicine*
Stanton Segal, M.D., *Clinical Instructor in Medicine*
Gerald John Fisher, A.B., M.D., *Clinical Instructor in Medicine*
William Leete Stone, A.B., M.D., *Clinical Instructor in Medicine*
Ted Clemens, Jr., B.S., M.D., *Clinical Instructor in Medicine*
Jacob Robbins, A.B., M.D., *Clinical Instructor in Medicine*
James Bernard Field, M.D., *Clinical Instructor in Medicine*
Agamemnon Despopoulos, M.D., *Clinical Instructor in Medicine*
Robert Proulx Heaney B.S., M.D., *Clinical Instructor in Medicine*
George Archibald Kelser, Jr., B.S., M.D., *Clinical Instructor in Medicine*
Jacob Robbins, A.B., M.D., *Clinical Instructor in Medicine*
Bernard Howard Ostrow, A.B., M.D., *Clinical Instructor in Medicine*

Tsung Cheng, B.S., M.D., M.S. in Med., *Fellow in Medicine (Cardiovascular Diseases)*
Irene I-Lieu Hsu Sui, B.S., M.D., *Fellow in Medicine (Cardiovascular Diseases)*
Harold Heacock Orvis, Jr., B.S., M.D., *Fellow in Medicine (Cardiovascular Diseases)*
Benjamin Marciano Limson, M.D., *Fellow in Medicine (Infectious Diseases)*
Charles William Foulke, A.B., M.D., *Fellow in Medicine (Neoplastic Diseases)*
Margaret Katherina McCabe, M.D., *Fellow in Medicine (Neoplastic Diseases)*
Jerome Harold Epstein, A.M., M.D., *Fellow in Medicine (Gastroenterology)*
Sam Chapman Pascoe, A.B., M.D., *Fellow in Medicine (Cardiovascular Diseases)*
Jairo Velasquez, M.D., M.S. in Med., *Fellow in Medicine (Cardiovascular Diseases)*
Athanasios Vasilios Avramides, M.D., *Assistant in Medicine*
Charles David Cooper, A.B., M.D., *Assistant in Medicine*
George Themistocles Economus, M.D., *Assistant in Medicine*
Wilfred Russell Ehrmantraut, M.D., *Assistant in Medicine*
Malcolm Fleishman, A.B., M.D. *Assistant in Medicine*
Richard Cranmer Fowler, B.S., M.D., *Assistant in Medicine*
Urs Peter Haemmerli, M.D., *Assistant in Medicine*
Cornelius John Hayes, M.D., *Assistant in Medicine*
John Robert Holmes, A.B., M.D., *Assistant in Medicine*
John Wallace McMeel, M.D., *Assistant in Medicine*
Edgar Elliot Pelz, A.B., M.D., *Assistant in Medicine*
Concepcion Reyes, M.D., *Assistant in Medicine*
Martin Lawrence Stoker, M.D., *Assistant in Medicine*
Polly Williams Teagle, A.B., M.D., *Assistant in Medicine*
Howard Erwin Ticktin, M.D., *Assistant in Medicine*
Burton Lester Travis, M.D., *Assistant in Medicine*

132 *History of Medicine* — The Staff
One hour a week

236 *Clinical Microscopy* — The Staff
Conferences and studies in the clinical application of laboratory examinations of blood, body fluids, exudates, and excreta. Three hours a week.

241 *Physical Diagnosis I* — The Staff
Theoretical considerations of the principles of physical diagnosis. One hour a week

242 *Physical Diagnosis II* — The Staff

Covers not only theoretical but practical application of principles of physical diagnosis as related to examination of patients. Six hours a week.

244 *Introduction to Medicine* — The Staff

Lectures covering the principles of internal medicine preparatory to clinical studies and training in the inpatient and outpatient services. Four hours a week.

320 *Medical Jurisprudence* — The Staff

Lectures on the legal and ethical rights of physicians, and on the legal problems with which the physician comes in contact. One hour a week for sixteen weeks.

325–26 *Clinical Clerkships* — The Staff

Training with bed patients under individual instruction designed to develop ability in examination of patients and case taking as well as practise in clinical microscopy. Eight weeks. D. C. General Hospital.

327–28 *Clinical Pathological Conferences I* — The Staff

Conferences are held at the School of Medicine. Case histories are presented and discussed by the students and members of the staff. Clinical, laboratory, and necropsy findings are compared. One hour a week

339–40 *Therapeutic Conferences I* — Staff of Medicine and Pharmacology

Conferences designed to emphasize the application of pharmacological principles to the problems of clinical medicine. Two hours a week. University and D. C. General hospitals.

349–50 *Medical Conferences* — The Staff

Two hours a week.

421–22 *Outpatient Clinics* — The Staff

Individual case studies under personal supervision of the Staff. Daily clinics on current medical problems and seminars stressing physiological aspects of diseases. Individual examinations and instruction in medical specialties. Six weeks. University Hospital.

423–24 *Clinical Clerkship* — The Staff

Six weeks. University and Mt. Alto hospitals.

427–28 *Clinical Pathological Conferences II* — The Staff

Continuation of Medicine 327–28. One hour a week

429–30 *Clinical Pathological Conferences III* — Peery, Halley

Conferences are held at the University Hospital. Attendance is required of students during their medical clerkships there. One hour a week.

431 *Forensic Medicine* — The Staff

Organized in conjunction with the University Law School for the purpose of acquainting medical students with their legal responsibilities. Three hours a week for four weeks.

NEUROLOGY AND NEUROLOGICAL SURGERY

James Winston Watts, B.S., M.D., *Professor of Neurological Surgery, Executive Officer*

Harold Stevens, Ph.D., M.D., *Professor of Neurology*

Seymour Solomon Kety, A.B., M.D., *Professorial Lecturer in Neurology*

Hyman David Shapiro, M.D., *Associate Clinical Professor of Neurology*

Robert Henry Groh, B.S., M.D., *Associate Clinical Professor of Neurology*

Jonathan Marshall Williams, M.D., *Assistant Clinical Professor of Neurological Surgery*

James Peter Murphy, B.S., M.D., *Assistant Clinical Professor of Neurological Surgery*

Hugo Victor Rizzoli, A.B., M.D., *Assistant Clinical Professor of Neurological Surgery*

Anatole Stephen Kebakian, M.D., Ph.D., *Assistant Clinical Professor of Neurology*

Gordon Millikan, B.S., M.D., *Assistant Clinical Professor of Neurology*

Paul Chodoff, A.B., M.D., *Associate in Neurology*

George Davis Weickhardt, M.D., *Associate in Neurology*

Harvey Ammerman, B.S., M.D., *Clinical Instructor in Neurological Surgery*

James Francis Hammill, B.S., M.D., *Clinical Instructor in Neurology*

Garrett Swain, M.D., *Clinical Instructor in Neurological Surgery*

Marvin Curtis Korengold, D.D.S., B.S., B.M., M.D., *Clinical Instructor in Neurology*

John Thomas Lord, A.B., M.D., C.M., *Clinical Instructor in Neurological Surgery*

Delora Fowler Mott, M.D., *Clinical Instructor in Neurology*

Jose Humberto Mateos-Gomez, B.S., M.D., *Fellow in Neuropathology*

Hal Curtis Holland, M.D., *Assistant in Neurological Surgery*

249 *Neurology, Basic (elective)* Stevens, Williams
Methods used to study the form and function of the nervous system. Lectures and laboratory demonstrations. One hour a week.

250 *Neurology* Shapiro, Stevens
Introductory lectures on clinical neurology with specimens, lantern slides, and motion pictures. One hour a week.

331 *Neurology and Neurological Surgery* Watts, Stevens
Clinical lectures and demonstrations. One hour a week.

333–34 *Neurology and Neurological Surgery, Clinical Clerkship* — Stevens, Williams, Ammerman

Instruction in history, physical examination, ordinary clinical procedures. Attendance at neurosurgical operations. Six students in rotation, two weeks. D. C. General Hospital.

335–36 *Neurological Conference* — Stevens and Staff

Clinical conference one afternoon a week followed by clinico-pathologic study of specimens from current necropsies. Two and one-half hours a week. Six students in rotation, two weeks. D. C. General Hospital.

431–32 *Neurology and Neurological Surgery Clinic* — Shapiro, Rizzoli

Neurological outpatient clinic. Consultation of staff on ambulatory cases, demonstration of diagnostic procedures, disposition of neuropsychiatric cases, ward rounds. Six students in rotation. Two hours a week. University Hospital.

433–34 *Clinical Neurology* — Groh

Neurological inpatient examinations and demonstrations. Six students in rotation. Two hours a week. St. Elizabeths Hospital.

436 *Neurological Surgery (elective)* — Murphy and Staff

Lectures and motion picture demonstration of neurosurgical problems. One hour a week.

OBSTETRICS AND GYNECOLOGY

John Parks, M.S., M.D., *Professor of Obstetrics and Gynecology, Executive Officer*

Henry Lauran Darner, A.B., M.D., *Clinical Professor of Obstetrics and Gynecology*

George Nordlinger, A.B., M.D., *Clinical Professor of Obstetrics and Gynecology*

Robert Henry Barter, B.S., M.D., *Associate Professor of Obstetrics and Gynecology*

Samuel Mayer Dodek, A.M., M.D., *Associate Clinical Professor of Obstetrics and Gynecology*

Jeremiah Keith Cromer, M.D., *Assistant Clinical Professor of Obstetrics and Gynecology*

James Albert Dusbabek, M.D., *Associate in Obstetrics and Gynecology*

Clarence Kendall Fraser, Ph.B., M.D., *Associate in Obstetrics and Gynecology*

Barton Winters Richwine, M.D., *Associate in Obstetrics and Gynecology*

Floyd Sterling Rogers, M.D., *Associate in Obstetrics and Gynecology*

Rufus Martin Roll, A.B., M.D., *Associate in Obstetrics and Gynecology*

Caroline Jackson, A.M., M.D., *Associate in Obstetrics and Gynecology*

James Glover Sites, M.D., *Instructor in Obstetrics and Gynecology*

Julius Robert Epstein, M.D., *Clinical Instructor in Obstetrics and Gynecology*

Morton Selwyn Kaufman, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*

William Thurston Lady, M.D., *Clinical Instructor in Obstetrics and Gynecology*

Jed Williams Pearson, Jr., A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*

Samuel Hazen Shea, M.D., *Clinical Instructor in Obstetrics and Gynecology*

Thomas Miles Leonard, Ph.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*

Albert Seymour Bright, M.D., *Clinical Instructor in Obstetrics and Gynecology*

Shirley Sue Martin, M.D., *Clinical Instructor in Obstetrics and Gynecology*

Neel Jack Price, B.S., M.D., *Clinical Instructor in Obstetrics and Gynecology*

Roland Essig Bieren, M.D., *Clinical Instructor in Obstetrics and Gynecology*

Alexander LeSueur Russell, M.D., *Clinical Instructor in Obstetrics and Gynecology*

Thomas Ashton Wilson, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*

Marvin Peace Footer, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*

Donald Walters, B.S., M.D., *Clinical Instructor in Obstetrics and Gynecology*

Joseph Marshall Friedman, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*

Leon McNeely Liverett, B.S., M.D., *Clinical Instructor in Obstetrics and Gynecology*

William Prentiss McKelway, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*

William Hurlbert Cooper, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*

Robert James Brennan, A.B., M.D., *Assistant in Obstetrics and Gynecology*

Harry Hughes Ennis, A.B., M.D., *Assistant in Obstetrics and Gynecology*

Jack Fealy, M.D., *Assistant in Obstetrics and Gynecology*

Thomas Delos Foster, A.B., M.D., *Assistant in Obstetrics and Gynecology*

John Warton Harris, Jr., A.B., M.D., *Assistant in Obstetrics and Gynecology*

John Frederick Pauly, M.D., *Assistant in Obstetrics and Gynecology*

Melvin Wesley Sandmeyer, Jr., A.B., M.D., *Assistant in Obstetrics and Gynecology*

Roger Donald Whitehead, M.D., *Assistant in Obstetrics and Gynecology*

254 *Introduction to Obstetrics and Gynecology* — Dodek, Fraser

Lectures and demonstrations on the development and physiology of the female reproductive system and the management of normal pregnancy. One hour a week.

301–2 *Manikin Demonstrations* — Footer

The mechanism of labor and various types of operative delivery demonstrated to sections of the junior class in weekly sessions. D. C. General Hospital.

337–38 *Obstetrics and Gynecology* — The Staff

Lectures and demonstrations on the principles of obstetrics and gynecology. Two hours a week.

351–52 *Clinical Clerkship* The Staff
Clerkship with patients, including ward rounds, operating room demonstrations, and weekly clinic. Four weeks. D. C. General Hospital.

439–40 *Clinic in Obstetrics and Gynecology* Parks, Barter, Staff
Student presentation and discussion of patient problems. Demonstration of equipment used in obstetrics and gynecologic practice. One hour a week.

441–42 *Clinical Obstetrics* The Staff
Students participate in prenatal and postnatal clinic care, observe the course of labor and deliver patients under supervision, observe and participate in the gynecological clinics and operating rooms of the University and D. C. General hospitals, attend bi-weekly departmental conferences and daily ward rounds in the University and D. C. General hospitals.

443–44 *Clinical Gynecology* Parks, Barter
Students observe and participate in the gynecological clinics and operating rooms of the University and D. C. General hospitals.

OPHTHALMOLOGY

Ronald Atmore Cox, A.B., M.D., *Professor of Ophthalmology, Executive Officer*

Ernest Alfred Watson Sheppard, M.D., C.M., *Clinical Professor of Ophthalmology*

Richard Wallace Wilkinson, A.B., M.D., M.S. in Med., *Assistant Clinical Professor of Ophthalmology*

Carmon Robert Naples, B.S., M.D., *Associate in Ophthalmology*

Walter Joseph Romejko, M.D., *Associate in Ophthalmology*

William Paxson Chalfant, Jr., M.D., *Associate in Ophthalmology*

William Joseph Graham Davis, A.B., M.D., *Associate in Ophthalmology*

Robert Edward duPrey, B.S., M.D., *Associate in Ophthalmology*

Robert Day, A.B., M.D., *Associate in Ophthalmology*

Ralph John Carbo, Jr., A.B., M.D., *Clinical Instructor in Ophthalmology*

Melvin Gustavus Alper, A.B., M.D., *Clinical Instructor in Ophthalmology*

Oscar Lavine, M.D., *Clinical Instructor in Ophthalmology*

351–52 *Ophthalmology* — The Staff

A lecture course presenting the principles of ophthalmology, with special reference to points of importance to the general practitioner. One hour a week for sixteen weeks.

447 *Clinic* — The Staff

During medical outpatient service, each student is given individual instruction in the ophthalmological aspects of systemic disease. University Hospital.

OTOLARYNGOLOGY

William Herndon Jenkins, M.D., *Professor of Otolaryngology*
Aubrey David Fischer, M.D., *Assistant Clinical Professor of Otolaryngology*
James Jerry McFarland, Jr., B.S., M.D., *Assistant Clinical Professor of Otolaryngology, Executive Officer*
Catharine Birch, A.B., M.D., *Associate in Otolaryngology*
Jack Louis Levine, M.D., *Associate in Otolaryngology*
Aram Glorig, Jr., B.S., M.D., *Clinical Instructor in Otolaryngology*
Morris Edward Krucoff, B.S., M.D., *Clinical Instructor in Otolaryngology*
Russel Smith Page, Jr., A.B., M.D., *Clinical Instructor in Otolaryngology*
Willard Beecher Walters, B.S., M.D., *Clinical Instructor in Otolaryngology*
Harry Ward McCurdy, A.B., M.D., *Clinical Instructor in Otolaryngology*
Joseph Aziz Sabri, A.B., M.D., *Clinical Instructor in Otolaryngology*

351 *Otolaryngology* — McFarland, Jenkins
Lectures and demonstrations on anatomy, physiology, and diseases of the ear, nose, and throat. One hour a week for fourteen weeks

354 *Bronchoscopy* — McFarland
A series of lectures on the fundamental principles and the use of instruments, including both the bronchoscope and esophagoscope. One hour a week for two weeks.

356 *Clinic* — The Staff
Practical clinical instruction in the diagnosis and treatment of diseases of the ear, nose, and throat. One and one-half hours once a week
D. C. General Hospital.

PATHOLOGY

Roger Morrison Choisser, B.S., M.D., *Professor of Pathology*
Thomas Martin Peery, A.B., M.D., *Professor of Pathology, Executive Officer*
Daniel Leigh Weiss, A.B., M.D., *Adjunct Clinical Professor of Pathology*
Frank Nelson Miller, B.S., M.D., *Associate Professor of Pathology*
William Newman, A.B., M.D., *Assistant Professor of Pathology*
Erving Francis Geever, M.D., Ph.D., *Assistant Professor of Pathology*
Lorenz Eugene Zimmerman, A.B., M.D., *Associate in Pathology*
Lois Irene Platt, A.B., M.D., *Clinical Instructor in Pathology*

Special Staff for Demonstrations

John Stewart Howe, A.B., M.D., *Assistant Clinical Professor of Pathology*
Raymond Georges Gottschalk, B.S., M.D., *Associate in Pathology*
Franklin Martin, Jr., A.B., M.D., C.M., M.S. in Neurol., *Associate in Pathology*
Richard Emery Palmer, A.B., M.D., *Associate in Pathology*
William Francis Enos, A.B., M.D., *Clinical Instructor in Pathology*
Robert Joel Fink, M.D., *Clinical Instructor in Pathology*
Lester Walter Fix, M.D., *Clinical Instructor in Pathology*

Special Lecturers

Elson Bowman Helwig, B.S., M.D., *Assistant Chief, Pathology Division, Armed Forces Institute of Pathology*
Hans Frank Smetana, M.D., *Pathologist, Armed Forces Institute of Pathology*
Elizabeth Mapelsden Ramsey, A.B., M.D., *Research Associate and Pathologist, Department of Embryology, Carnegie Institution of Washington*
Lent Clifton Johnson, B.S., M.D., *Pathologist, Armed Forces Institute of Pathology*

259-60 *Pathology* Peery, Miller

General pathology of inflammations, degenerations, malformations, and neoplasms. Special pathology of the organs and specific diseases. The laboratory work consists of the gross and microscopic study of diseased tissue. Special emphasis is placed on the interrelationships of the various pathologic changes and their correlation with symptoms and

physical signs. Fall semester, eight hours a week; spring semester, two hours a week.

261–62 *Necropsy* — The Staff
Students are required to attend and assist in the performance of necropsies at the University Hospital.

263–64 *Demonstrations in Pathology* — Special Staff
Gross specimens of representative cases are demonstrated and discussed. One hour a week.

265–66 *Correlation of Pathology with Clinical Diagnosis* — The Staff
Lectures and case demonstrations are given by members of the medical, surgical, and radiological staffs. One hour a week.

267–68 *Seminars in Pathology (elective)* — Special Lecturers
Advanced lectures are presented as arranged on special topics in pathology.

320 *Medical Jurisprudence* — Miller
Forensic pathology and toxicology. The legal and ethical rights and responsibilities of physicians. Legal problems in medicine. One hour a week.

327–28 *Clinical Pathological Conference I* — The Staff
Conferences are held at the School of Medicine. Case histories are presented and discussed by the students and members of the staff. Clinical, laboratory, and necropsy findings are compared. One hour a week.

427–28 *Clinical Pathological Conference II* — The Staff
Continuation of Pathology 327–28. One hour a week.

429–30 *Clinical Pathological Conference III* — The Staff
Conferences are held at the University Hospital. Attendance is required of students during their medical clerkships there. One hour a week.

492 *Surgical Pathology* — Newman
Gross and microscopic surgical specimens are demonstrated and discussed. One hour a week.

493–94 *Pathology Clerkship (elective)* — Peery, Miller, Newman
A limited number of students receive training in surgical pathology and necropsies in the laboratory of the University Hospital.

PEDIATRICS

Preston Alexander McLendon, B.S., M.D., *Professor of Pediatrics, Executive Officer*

Margaret Mary Nicholson, A.B., M.D., *Clinical Professor of Pediatrics*

Edward Lewis, M.D., *Clinical Professor of Pediatrics*

William Staton Anderson, A.B., M.D., *Clinical Professor of Pediatrics*

Leroy Edward Hoeck, M.D., *Adjunct Clinical Professor of Pediatrics*

John Augustine Washington, B.S., M.D., *Associate Clinical Professor of Pediatrics*

Reginald Spencer Lourie, B.S., M.D., Med. Sc.D., *Associate Clinical Professor of Pediatric Psychiatry*

Joseph Michael LoPresti, B.S., M.D., *Assistant Professor of Pediatrics*

Mabel Harlakenden Grosvenor, A.B., M.D., *Assistant Clinical Professor of Pediatrics*

Aaron Nimetz, A.B., M.D., *Assistant Clinical Professor of Pediatrics*

Dorothy Steinle Jaeger-Lee, M.D., *Assistant Clinical Professor of Pediatrics*

George Maksim, M.D., M.S. in Ped., *Assistant Clinical Professor of Pediatrics*

William Allen Howard, A.B., M.D., *Assistant Clinical Professor of Pediatrics*

John Howell Peacock, B.S., M.D., *Associate in Pediatrics*

Maynard Irving Cohen, A.B., M.D., *Associate in Pediatrics*

Mary Katherine Laurence Sartwell, A.B., M.D., *Associate in Pediatrics*

Allan Bertram Coleman, M.D., *Associate in Pediatrics*

Charles Frederick Stiegler, A.B., M.D., *Associate in Pediatrics*

Hugh Gambel Clark, A.B., M.D., *Associate in Pediatrics*

Adrian Recinos, Jr., B.S., M.D., *Associate in Pediatrics*

Robert Edward Martin, M.D., *Associate in Pediatrics*

Charles Richard Webb, B.S., M.D., *Associate in Pediatrics*

William Stark, A.B., M.D., *Associate in Pediatric Psychiatry*

Margaret Frances Gutelius, A.B., M.D., *Associate in Pediatrics*

Archibald Roch MacPherson, A.B., M.D., *Associate in Pediatrics*

Roland Wingate Penick, M.D., *Instructor in Pediatrics*

Herbert Harold Diamond, M.D., *Clinical Instructor in Pediatrics*

Reginald Henry Mitchell, M.D., *Clinical Instructor in Pediatrics*

Robert Orr Warthen, M.D., *Clinical Instructor in Pediatrics*

Emilie Annabelle Black, B.S., M.D., *Clinical Instructor in Pediatrics*

Robert Harper Anderson, M.D., *Clinical Instructor in Pediatrics*

Warren Godfrey Preisser, A.B., M.D., *Clinical Instructor in Pediatrics*

Sanford Leon Leikin, M.D., *Clinical Instructor in Pediatrics*

Bennett Olshaker, A.B., M.D., *Clinical Instructor in Pediatric Psychiatry*
Harold Taylor Yates, M.D., *Clinical Instructor in Pediatrics*
George Joel Cohen, M.D., *Clinical Instructor in Pediatrics*

Special Lecturer

Myron Ezra Wegman, A.B., M.D., M.P.H., *Director, Division of Education and Training, Pan American Sanitary Bureau, Regional Office for the Americas of World Health Organization:* Pediatrics

256 *Pediatrics* — McLendon and Staff
Lectures on physiology of the newborn, development, infant nutrition, diseases of the newborn, common anomalies and system diseases of infancy and childhood. Two hours a week. Medical School.

357–58 *Clinical Clerkship—General Pediatrics* — LoPresti and Staff
Introduction to clinical pediatrics. Emphasis on bedside discussion and group seminars including the newborn. Ward rounds. Five students in rotation, two weeks. D. C. General Hospital.

359–60 *Clinical Clerkship—Contagious Diseases* — LoPresti and Staff
Conferences and bedside discussion in contagious and infectious diseases. Prevention and quarantine measures. Five students in rotation, two weeks. D. C. General Hospital.

361–62 *Clinical Conference I* — McLendon and Staff
Required. Presentation and discussion by students of current patient problems. One hour a week. D. C. General Hospital.

363–64 *Ward Rounds* — Nicholson, LoPresti, and Staff
Bi-weekly ward rounds, with students and Resident Staff. D. C. General Hospital.

365–66 *Psychiatry* — Lourie and Staff
Lectures on normal behavior and emotional development. Clinical case analysis. Second, third, and fourth years.

457–58 *Clinical Clerkship* — Anderson and Staff
Full time, including assignment to night and holiday [illegible]. Case studies on wards under direct Required supervision. Ward rounds with Staff and Residents. Twelve students six weeks. Children's Hospital.

459–60 *Outpatient Clinics* — Gutelius and Staff
Work in Medical and Specialty clinics including surgery, [illegible], X-ray, child welfare, cardiology, dermatology, neurology, and child guidance. Children's Hospital.

461–62 *Clinico-pathological Conferences* — The Staff
Clinical and pathological discussion of recent patient history and laboratory data. Once a week. Children's Hospital.

463–64 ***Section Conferences*** — The Staff

Discussion of clinical problems of diagnosis and treatment of current patients. Twice a week. Children's Hospital.

465–66 ***Section Conferences*** — The Staff

Surgical diagnosis, pre- and post-operative management. One hour a week. Children's Hospital.

467–68 ***Clinical Conference II*** — McLendon and Staff

Required. Case presentation by students. Staff and student discussion of diagnosis and management. One hour a week. Medical School.

469–70 ***Child Guidance and Development*** — Jaeger-Lee, Lourie

Lectures to second year class. Clerkship in fourth year including Well Baby Clinic. Group and class conferences.

PHARMACOLOGY

Paul Kenneth Smith, Ph.D., *Professor of Pharmacology, Executive Officer*
Ralph Grafton Smith, M.D., Ph.D., *Clinical Professor of Pharmacology*
Bernard Beryl Brodie, Ph.D., *Professorial Lecturer in Pharmacology*
Harold George Mandel, Ph.D., *Associate Professor of Pharmacology*
Gertrude Diane Maengwyn-Davies, Ph.D., *Associate Research Professor of Pharmacology*
Clarke Davison, Ph.D., *Assistant Professor of Pharmacology*
Moreshwar Vithal Nadkarni, Ph.D., *Assistant Research Professor of Pharmacology*
Eberhard Georg Trams, Ph.D., *Assistant Research Professor of Pharmacology*
Elise Ann Brandenburger Brown, M.S., *Research Fellow in Pharmacology*
Nicholas Michael Cambosos, M.S., *Teaching Fellow in Pharmacology*
Edwin Ira Goldenthal, M.S., *Teaching Fellow in Pharmacology*
Ariel Cahill Hollinshead, A.M., *Research Fellow in Chemotherapy*
William Daniel Kundin, M.S., *Research Fellow in Chemotherapy*
Gertrude Sheva Lum, M.S., *Research Fellow in Chemotherapy*
Richard Anthony Salvador, A.M., *Teaching Fellow in Pharmacology*
Ariel Cahill Hollinshead, A.M., *Research Fellow in Chemotherapy*

SPECIAL LECTURER IN PHARMACOLOGY

William Vincent Graham Leahy, Ph.D., *Research Physicist, Radio Isotope Unit, Veterans Administration Center, Martinsburg, Pa.*

The Staff

261 *Pharmacology* (5)
Lectures and conferences concerning the interaction of drugs and biological systems as a basis for the rational therapy of disease. Open to qualified nonmedical students. Five hours a week.

The Staff

262 *Chemotherapy* (1)
Continuation of Pharmacology 261. One hour a week.

The Staff

263 *Pharmacology Laboratory* (1)
Laboratory instruction and demonstrations designed to complement Pharmacology 261. Open to qualified nonmedical students. Three hours a week.

The Staff

267–68 *Pharmacological Research* (arr.)
Primarily for those properly qualified graduate and medical students seeking careers in pharmacology. Hours and credits to be arranged.

269–70 ***Pharmacology Seminar*** (1–1) The Staff
Recent advances in pharmacology. For those interested in pharmacological research. Open to qualified nonmedical students. Two hours a week.

279–80 *Special Methods in Research* (arr.) The Staff
A course to familiarize the student with advanced biochemical, microbiological, and physiological methods employed in pharmacological investigations. Open to qualified nonmedical students. Hours and credits to be arranged.

299–300 ***Thesis*** (3–3) The Staff
Required of Master of Arts and Master of Science candidates.

339–40 ***Therapeutic Conferences I*** Staff of Pharmacology and Medicine
Conferences designed to emphasize the application of pharmacological principles to the problems of clinical medicine. One hour a week.

PHYSICAL MEDICINE AND REHABILITATION

Charles Samuel Wise, B.S., M.D., *Professor of Physical Medicine and Rehabilitation, Executive Officer*

Francis Liell Wenger, B.S., M.D., *Assistant Clinical Professor of Physical Medicine and Rehabilitation*

Alvin Knudson, B.S., M.D., *Associate in Physical Medicine and Rehabilitation*

Charles Jerome Everding, B.S., M.D., *Clinical Instructor in Physical Medicine and Rehabilitation*

Richard Roberts Owen, B.S., M.D., *Fellow in Physical Medicine and Rehabilitation*

Jessie Elizabeth Fair, M.C.S.P., R.P.T., *Assistant in Physical Medicine and Rehabilitation*

Helen Eileen Weber, B.S., R.P.T., R.N., *Assistant in Physical Medicine and Rehabilitation*

150 *Elements of Physical Medicine* — The Staff

In arrangement with the Anatomy Department, lectures and demonstrations of the various tests and measurements are employed in the evaluation of physical disability.

351–52 *Advanced Physical Medicine* — The Staff

Lectures and demonstrations concerning the various techniques, clinical applications of physical medicine and rehabilitation to be integrated with the teaching of the associated medical and surgical specialties.

467–68 *Clinical Studies* — The Staff

Clinical teaching and demonstration at the University Hospital.

485 *Research* (arr.) — The Staff

Open to medical students and qualified nonmedical students. Time and credits to be arranged

PHYSIOLOGY

Errett Cyril Albritton, A.B., M.D., *Fry Professor of Physiology*

Chester Elwood Leese, Ph.D., *Professor of Physiology, Executive Officer*

William Rankin Duryee, Ph.D., *Research Professor of Physiology*

Joseph William Still, M.D., M.P.H., *Assistant Professor of Physiology*

Habeeb Bacchus, Ph.D., M.D., *Assistant Research Professor of Physiology*

Melvin Harold Heiffer, Ph.D., *Assistant Research Professor of Physiology*

Hyman Erwin Steinman, M.D., *Lecturer in Physiology*

Charles Arthur Toompas, A.M., *Instructor in Physiology*

Louis Pat Munan, M.S., *Associate in Physiology*

William Spector, A.M., *Associate in Physiology*

Francis DeSales Woidich, B.S., M.D., *Associate (Research) in Physiology*

Katherine Virginia Greene, Ph.D. *Teaching Fellow in Physiology*

Tal Gordon Hiebert, A.M., *Teaching Fellow in Physiology*

115 *Physiology* (3) Leese

Lectures for nonmedical students covering the fundamentals of physiology in its various subdivisions. Prerequisite: one year of general science or one semester of a biological science. Section A: Tues. and Thurs., 8:45 to 10 A.M. Section B: Tues. and Thurs., 8:10 to 9:25 A.M.

117 *Experimental Physiology* (1) The Staff

Laboratory exercises in the fundamentals of physiology for nonmedical students. Prerequisite or concurrent registration: Physiology 115 or the equivalent. Material fee, $10.50. Sat., 9 to 10 to 12 A.M.

120 *Physiology of Endocrine Activity* (2) Albritton, Munan

For nonmedical students. The circulatory, metabolic, reproductive, muscle, and other adjustments, immediate and long term, accompanying and affecting endocrine activity. Prerequisite: Physiology 115 or the equivalent. Tues. and Thurs., 8:10 P.M.

130 *The Psycho-physiology of Personality* (2) Leese

For nonmedical students. Lectures on the genesis and expression of personality, with emphasis on the physiological approach. Prerequisite: Physiology 115 or the equivalent and general psychology. Tues. and Thurs., 5:10 P.M.

150 *Advanced Physiology* The Staff

Lectures and laboratory work in all divisions of Physiology. This course is designed for medical students.

201–2 *Experimental Method* (1–1) Albritton
For nonmedical graduate students. Design of controlled experiments in medical or biological investigation; errors in design, criticism and judgment of evidence; and tests of the statistical significance of experimental results. Sat., 9:00 A.M.
Physiology 201x, same as 201, offered spring semester

211–12 *Problems in Physiology* (arr.) The Staff
For nonmedical graduate students. Open to undergraduate students with the approval of the Department. Prerequisite: Physiology 115 and 117, or the equivalent. Time and credits to be arranged.

221–22 *Physiology Seminar* (1–1) The Staff
For nonmedical students undertaking graduate work in physiology. Prerequisite: Physiology 115 and 117, or the equivalent. Weekly throughout the year.

231 *Advanced Physiology of Circulation and Respiration* (4) Albritton, Leese, and Staff
For nonmedical graduate students. Lectures on blood, heart, circulation, tissue water, respiration, and acid-base balance. Four hours a week, to be arranged.

234 *Advanced Physiology of Nutrition, Metabolism, and Excretion* (2) Leese, Still, Steinman
For nonmedical graduate students. Lectures on nutrition, digestion, metabolism, excretion, and temperature regulation. Two hours a week, to be arranged.

236 *Advanced Physiology of the Endocrine Glands and Reproduction* (1) Albritton, Still, and Staff
For nonmedical graduate students. Lectures on ductless glands, hormones, humoral agents, and reproduction. One hour a week, to be arranged

238 *Advanced Physiology of the Neuro-muscular System* (2) Leese
For nonmedical graduate students. Lectures on sensory reception, central nervous processes, somatic and visceral motor activity, and the behavior of smooth and striped muscle. Two hours a week, to be arranged

240 *Advanced Experimental Physiology* (3) The Staff
For nonmedical graduate students. Laboratory work only. Correlated with the lectures in courses 231–238. Material fee, $40. Nine hours a week, to be arranged.

242 *Advanced Physiology of the Cell* (1) Duryee
For nonmedical graduate students. Special emphasis on [illegible] and the biochemistry of the cell in relation to organ function. One hour a week, to be arranged.

295–96 *Research* (arr.) Albritton, Leese, and Staff
Time and credits to be arranged.

299–300 *Thesis* (3–3) Albritton, Leese

PSYCHIATRY

Winfred Overholser, A.B., M.D., Sc.D., L.H.D., *Professor of Psychiatry, Executive Officer*

Solomon Katzenelbogen, M.D., *Clinical Professor of Psychiatry*

Addison McGuire Duval, M.D., *Clinical Professor of Psychiatry*

Leon Yochelson, A.B., M.D., *Clinical Professor of Psychiatry*

Sidney Berman, B.S., M.D., *Assistant Clinical Professor of Psychiatry*

Morris Kleinerman, Ch.D., M.B., *Assistant Clinical Professor of Psychiatry*

Henry Prather Laughlin, B.S., M.D., *Assistant Clinical Professor of Psychiatry*

Marshall deGraffenried Ruffin, B.S., M.D., *Assistant Clinical Professor of Psychiatry*

Jay Louis Hoffman, A.B., M.D., *Assistant Clinical Professor of Psychiatry*

Elmer Klein, B.S., M.D., *Assistant Clinical Professor of Psychiatry*

Anna Coyne Todd, A.B., M.D., *Assistant Clinical Professor of Psychiatry*

Norman Taub, B.S., M.D., *Assistant Clinical Professor of Psychiatry*

Harold Corson, M.D., *Assistant Clinical Professor of Psychiatry*

Anna Genevieve McEldowney, A.B., M.D., *Associate in Psychiatry*

Sarah Shtoffer Tenenblatt, A.B., M.D., *Associate in Psychiatry*

David Eden, A.B., M.D., *Associate in Psychiatry*

Robert Milton Greenberg, A.B., M.D., *Associate in Psychiatry*

Helen Pallister, Ph.D., *Clinical Instructor in Psychiatry (Psychology)*

Richard Allan Rogers, B.S., M.D., *Clinical Instructor in Psychiatry*

Richard Graham Board, B.S., M.D., *Clinical Instructor in Psychiatry*

Frances Kennedy Milligan, M.S., M.D., *Fellow in Psychiatry*

165 *Dynamics of Personality Development* Berman

An orientation course in the anatomical, physiological, and psychological growth and development of personality. Consideration of characteristics of structure, function, and development of the psyche leading to normal behavior as a basis for the study of the pathological. Evaluation of interpersonal relationships. One hour a week.

178 *Psychopathology* Hoffman

Manifestations and understanding of various mental mechanisms and abnormal reaction-types, preceded by history of development of psychopathology and illustrated with case material. One hour a week.

266 *Psychiatry* — Overholser

History, etiology, symptoms, course, and treatment of the major psychoses with emphasis on the dynamics involving the person as a whole. One hour a week.

268 *Demonstration Clinics* — McEldowney, Tenenblatt

Presentation of clinical cases of major mental illnesses and primary behavior disturbances, correlating with Psychiatry 266. Each student examines patients under supervision. Three hours a week. St. Elizabeths Hospital.

271 *Psychosomatic Aspects of General Medicine* — Katzenelbogen

Somatic disorders of psychogenic origin. The role of personality reactions in functional and organic disorders. One hour a week.

324 *Psychoneurosis* — Laughlin

Etiology, psychopathology, clinical aspects, and treatment of various types of psychoneuroses. One hour a week. Medical Conference Room, D. C. General Hospital.

431–32 *Clinical Clerkship* — Duval, Kleinerman, Yochelson, Ruffin, Taub, Corson, Pallister, Eden, Bruce, Greenberg, Rogers, Beard

Supervised examination, diagnosis, and treatment of ambulatory borderline cases in University Hospital and hospitalized cases at St. Elizabeths Hospital. Conferences for discussion of cases. Clinical application of psychiatric principles to general medical practice is stressed. Three weeks divided service. University Hospital Inpatient and Outpatient Psychiatric clinics and St. Elizabeths Hospital.

RADIOLOGY

William Woodrow Stanbro, M.D., *Professor of Radiology, Executive Officer*

Solomon Rodney Bersack, B.S., M.D., *Assistant Clinical Professor of Radiology*

Charlotte Patricia Donlan, A.B., M.D., *Assistant Clinical Professor of Radiology*

Harry Jay Kicherer, M.D., *Assistant Clinical Professor of Radiology*

Alvin Charles Wyman, A.B., M.D., *Associate in Radiology*

Herman Litwer, M.D., *Associate in Radiology*

George Tievsky, M.D., *Clinical Instructor in Radiology*

Uthai Vincent Wilcox II, M.D., *Clinical Instructor in Radiology*

115-16 *Anatomy* — The Staff
Correlation of gross and Roentgen anatomy.

220 *Principles of Radiology* — The Staff
Lectures and discussions.

313 *Advanced Radiological Diagnosis* — The Staff
Lectures and discussions.

421-22 *Clinical Studies* — The Staff
Students are assigned to the X-ray Department in rotation on a full-time basis for a specific period.

SURGERY

Brian Blades, A.B., M.D., *Professor of Surgery, Executive Officer*
Paul Stirling Putzki, M.D., *Clinical Professor of Surgery*
Arch Lockhart Riddick, B.S., M.D., *Clinical Professor of Surgery*
John Hugh Lyons, M.D., M.S., *Clinical Professor of Surgery*
John Gordon Lee, A.B., M.D., C.M., Med. Sc.D., *Adjunct Clinical Professor of Surgery*
Robert Tuthill Gants, B.S., M.D., *Adjunct Clinical Professor of Surgery*
Herbert Hermann Schoenfeld, M.D., *Associate Clinical Professor of Surgery*
Alec Horwitz, M.S., M.D., *Associate Clinical Professor of Surgery*
William Stanley McCune, A.B., M.D., *Associate Clinical Professor of Surgery*
Walter Henry Gerwig, Jr., A.B., M.D., *Associate Clinical Professor of Surgery*
Vincent Michael Iovine, B.S., M.D., *Associate Clinical Professor of Surgery*
Owen Gwathmey, A.B., M.D., *Assistant Professor of Surgery*
Benjamin Franklin Dean, Jr., M.S., M.D., *Assistant Clinical Professor of Surgery*
Carl Berg, M.D., *Assistant Clinical Professor of Orthopedic Surgery*
Calvin Trexler Klopp, A.B., M.D., *Assistant Clinical Professor of Surgery*
Julius Salem Neviaser, A.B., M.D., *Assistant Clinical Professor of Orthopedic Surgery*
Jerome Blaine Harrell, M.D., *Assistant Clinical Professor of Surgery*
Leonard Theodore Peterson, B.S., M.D., *Assistant Clinical Professor of Orthopedic Surgery*
John Pletch Adams, B.S., M.D., *Assistant Clinical Professor of Orthopedic Surgery*
Gordon Sparks Letterman, B.S., M.D., *Assistant Clinical Professor of Surgery*
Richard Knight Thompson, D.D.S., *Associate in Dental Surgery*
William Ross Morris, M.D., *Associate in Surgery*
Jacob Joseph Weinstein, B.S., Phar.G., M.D., *Associate in Surgery*
William Carey Meloy, M.D., M.S. in Med., *Associate in Surgery*
Edward Alexander Cafritz, M.D., *Associate in Surgery*
Karl Hayden Wood, Phar.G., D.D.S., *Associate in Dental Surgery*
Isabella Harrison, A.B., M.D., *Associate in Surgery*
Henry Leon Feffer, A.B., M.D., *Associate in Orthopedic Surgery*
Howard Clemeth Pierpont, A.B., M.D., *Associate in Surgery*

James Richard Thistlethwaite, B.S., M.D., *Associate in Surgery*
John Mark Keshishian, M.D., *Instructor in Surgery*
Crenshaw Douglas Briggs, B.S., M.D., *Clinical Instructor in Surgery*
Joseph Francis Conlon, D.D.S., *Clinical Instructor in Dental Surgery*
Duane Case Richtmeyer, A.B., M.D., *Clinical Instructor in Surgery*
Leon Gerber, M.D., *Clinical Instructor in Surgery*
Thomas Bradley, A.B., M.D., *Clinical Instructor in Surgery*
Ernest Alva Gould, B.S., M.D., *Clinical Instructor in Surgery*
Austin Bertram Rohrbaugh, Jr., M.D., *Clinical Instructor in Orthopedic Surgery*
Marvin Hayne Kendrick, A.B., M.D., *Clinical Instructor in Surgery*
Brooks Gideon Brown, B.S., M.D., *Clinical Instructor in Surgery*
John Decator Hoyle, B.S., M.D., *Clinical Instructor in Surgery*
Robert Roland Smith, B.S., M.D., *Clinical Instructor in Surgery*
Norman Harry Isaacson, A.B., M.D., *Clinical Instructor in Surgery*
Charles Stanley White, Jr., B.S., M.D., *Clinical Instructor in Surgery*
Dennis Parfrement McCarty, M.D., *Clinical Instructor in Surgery*
Theodore Crandall Alford, A.B., M.D., *Clinical Instructor in Surgery*
Sung Haing Lee, M.D., *Fellow in Thoracic Surgery*
Thomas Dickson Armour, Jr., M.D., *Assistant in Surgery*
Gerald Lewis Caseboldt, A.B., M.D., *Assistant in Surgery*
James Arthur Danford, B.S., M.D., *Assistant in Surgery*
Lawrence Hyde Gordon, M.D., *Assistant in Surgery*
Emmett Russell Hall, Jr., M.D., *Assistant in Surgery*
Richard Kenneth Hughes, A.B., M.D., *Assistant in Surgery*
James Robert McClelland, M.D., *Assistant in Surgery*
Howell Douglas Miller, M.D., *Assistant in Surgery*
Julian Samuel Neistadt, A.B., M.D., *Assistant in Surgery*
Daniel Lamont Seckinger, M.D. *Assistant in Surgery*
Lawrence Robert Singer, M.D., *Assistant in Surgery*
William Albert Spencer, A.B., M.D., *Assistant in Surgery*

101–2 *Surgical Anatomy* Surgery and Anatomy Staffs
Clinics illustrating relationship between gross anatomy and clinical surgery. One hour every two weeks. University Hospital.

280 *Introduction to Surgery* The Staff
Lectures and recitations covering the field of general surgery. One hour twice a week.

284 *Surgical Physiology* The Staff
A clinical and laboratory course with particular emphasis on applied physiology. Two hours a week.

373–74 *Clinical Clerkship I* The Staff
The student is assigned and required to work up thoroughly the cases for diagnosis and treatment. D. C. General Hospital.

375–76 *Outpatient Surgical Clinic* — The Staff
Surgical clinic. Forty hours. D. C. General Hospital.

377–78 *Orthopedics I* — The Staff
Weekly orthopedic lecture, D. C. General Hospital; weekly seven and one-half hour ward rounds, D. C. General Hospital

379–80 *Surgical Staff Conference I* — The Staff
Tuesday at D. C. General Hospital.

383–84 *Surgical Clinic I* — Blades
Demonstration of various surgical diseases to the entire class. One hour a week.

473–74 *Clinical Clerkships II* — The Staff
Six weeks, University Hospital; three weeks, Mt. Alto Hospital.

479–80 *Surgical Staff Conference II* — The Staff
Wednesday at the University Hospital

483–84 *Surgical Ward Rounds* — Blades
Demonstration of various surgical diseases to fourth-year clerks. One hour a week. University Hospital

491–92 *Surgical Pathology II* — Newman
One hour conferences each week

493–94 *Surgical Anatomy* — Horwitz and Staff
Lectures for fourth-year clerks. One hour a week for twelve weeks. University Hospital.

497–98 *Surgical Clinic* — Gants and Staff
Conferences for fourth-year clerks assigned to the University Hospital. Two hours a week. Walter Reed Hospital

UROLOGY

Frederick A. Reuter, M.D., *Professor of Urology, Executive Officer*
Thomas Carlton Thompson, B.S., M.D., *Clinical Professor of Urology*
Edward Egner Ferguson, M.D., *Assistant Clinical Professor of Urology*
Leon Richard Culbertson, B.S., M.D., *Assistant Clinical Professor of Urology*
Gilbert Ottenberg, A.M., M.D., *Associate in Urology*
William Dabney Jarman, B.S., M.D., *Associate in Urology*
Gordon Rhodes MacDonald, B.S., M.D., *Clinical Instructor in Urology*
Herbert DeGrange Wolff, Jr., M.D., *Clinical Instructor in Urology*
Frederick Turner Reuter, M.D., *Clinical Instructor in Urology*
Hamilton Peacock Dorman, B.S., M.D., *Clinical Instructor in Urology*

395–96 *Clinics* The Staff

Clinical teaching and demonstrations on the care of urological cases with special emphasis on the pre- and post-operative management. Operative clinics and clinical teaching. D. C. General Hospital

491–92 *Urology* F. A. Reuter and Staff

Lectures covering the entire field of urology including diagnosis, treatment, and morbid pathology. One hour a week.

495–96 *Clinics* F. A. Reuter and Staff

Clinical demonstrations, teaching in the Outpatient Department, and urological X-ray conferences with special attention given to diagnostic procedures. One part of each section three hours a week. University Hospital

DEGREES CONFERRED

DOCTOR OF MEDICINE

JUNE 8, 1955

Charles Martin Aaronson D.C.
(With distinction)
A.B. 1948, The George Washington University

Gerritt Bakker N.J.

Richard Albert Bashore Calif.
A.B. 1951, University of California

Franklin David Berry Va.
(With distinction)
B.S. in E.E. 1950, Duke University

Charles Donald Bohanon Mont.
A.B. 1949, Montana State University

Lafayette Ernest Burns Calif.
B.S. 1951, University of California

Bruce Butler, Jr. D.C.
(With distinction)
B.S. 1951, Franklin and Marshall College

Francis Nelson Calver Va.
A.B. 1951, Howard College

George Wolf Cerny N.Y.
(With distinction)

Joe Ronald Cantrell Miss.

Thomas Nelson Carter D.C.
B.S. 1949, American University
M.S. 1954, The George Washington University

John Townsley Chapman Wash.

William Stapleton Chenevert Pa.

Thomas Chesley Cook Calif.
A.B. 1951, The George Washington University

Raymond Eugene Cullen Va.
A.B. 1949, University of California

Kenneth Claude Culliton Colo.
A.B. 1951, University of Denver

Harvey Richard Dantzler D.C.
A.B. 1951, Ohio Wesleyan University

Frank John Cavalli Calif.
A.B. 1950, San Diego State College
A.M. 1951, Claremont Graduate School

Allen Harold Eisenhofer D.C.
A.B. 1951, The George Washington University

John Reed Colvin Mich.
Indiana Phillip Dennis Utah
A.B. 1950, The George Washington University

Frederick Arnold Elsbernd Va.
(With distinction)
A.B. 1951, Grove City College
A.M. 1953, The George Washington University

Kenneth Clement Ewell D.C.
A.B. 1951, University of Michigan

Richard John Fischer Wash.
A.B. 1951, University of Washington

Fitzgerald Bradley, Jr. Canal Zone
B.S. 1950, The George Washington University

David Brown Feltman Va.
A.B. 1948, The George Washington University

Winfred Ernest Gallimek N.Y.
A.B. 1951, Syracuse University

Wesley Marshall Gant Ga.
A.B. 1951, University of Georgia

Jon Anstice Md.
(With distinction)

Crowley Rowland Gill
(With distinction)

A.B. 1951, Lafayette College Ky.

Harvey Dewayne Gilliam
A.B. 1954, Campbell College N.C.

John Thomas Hart N.Y.
B.S. 1951, Rensselaer Polytechnic Institute

Paul Gerome Hebert
(With distinction)
A.B. 1951, Syracuse University Md.

Nicholas Lambert Hetrick
A.B. 1951, Lafayette College Ind.

Bruce Gardner Hennessy Md.
A.B. 1950, Georgetown University

Richard Myers Hodgson Calif.
A.B. 1951, Hamilton College

Robert Leslie Hornbrook Calif.

Joseph Anthony Hynes
A.B. 1951, The George Washington University Va.

Floyd Jacob Jackson, Jr. Calif.
A.B. 1951, The George Washington University

Malcolm Charles Kiesales Pa.

James Quincy Kelly, Jr.
Edward E. Kimball
B.S. 1951, Pennsylvania State University

Lawrence Roy Kluger N.J.
A.B. 1951, The George Washington University

Peter Kolodzenski N.Y.

Peter Kolodzenski, Liverpool, N.Y.
A.B. 1951, Syracuse University Hong Kong

Ho Kit Lee Md.

Edward Landry, Jr.
A.B. 1951, The George Washington University Va.

Fred Greenwood Livingston, Jr. Md.
A.B. 1951, Duke University

Fred Herbert Lowenstein

Raymond Malcolm Lowell
B.S. 1951, The George Washington University Pa.

Lawrence Clinton Mac Gray

B.S. 1951, Pennsylvania State University

Lucy Grace Martin
A.B. 1951, Woodrow Wilson Jr. College D.C.

Lucy Jane Martin
A.B. 1951, The George Washington University

Mont

Pa

Va

Okla

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Md
Ohio

D C

N J

La
Ill

N J

N J

Va

N J

Pa

D C

Va

N J

Md

Pa

Ind

Utah

STUDENTS REGISTERED IN THE SCHOOL OF MEDICINE

1955–56

A

Alailima, Maea cafe, John (I) — Samoa
B.S. 1955, West Virginia Wesleyan College

Alarcon, Martha Odette (III) — Guatemala
A.B. 1953, Wellesley College

Albert, Bernard Louis (II) — N.J.
B.S. 1954, Franklin and Marshall College

Alving, Olav Henry (II) — Va.
B.S. 1951, The George Washington University

Andersen, Barrett Christian (III) — Calif.
A.B. 1951, San Jose State College

Anderson, Donald Kinmont (IV) — Ohio
A.B. 1952, Yale University

Anderson, William Bruce (III) — Calif.
A.B. 1950, Stanford University

Appegate, William Vale (III) — Calif.
A.B. 1953, University of California

Apter, Ronald Alan (II) — D.C.

Arnest, John Allen (III) — Va.
A.B. 1953, The George Washington University

Auerbach, Jack (IV) — Pa.

Austin, James Albert (IV) — D.C.
A.B. 1952, University of Southern California

B

Baxter, Vernon Henry (III) — D.C.
A.B. 1947, Concordia Theological Seminary

Barfield, William Landon (II) — Md.
A.B. 1954, Princeton University

Barrett, Bruce Ulmer (IV) — Md.
B.S. 1952, Georgetown University

Barge, Jack Lee (IV) — Ohio

Barr, Arnold Benjamin (I) — D.C.

Barrentine, Frank Thomas (IV) — Md.
A.B. 1953, Duke University

Barrett, John William (II) — Pa.

Barrow, Van Hunt (I) — Calif.
A.B. 1954, University of California at Los Angeles

Barnard, John Norman (II) — D.C.
B.S. 1954, Western Reserve University

Bauer, George Wendell, Jr. (III) — Calif.

Bayer, Robert Arthur (II) — Mich.
B.S. 1951, University of Maryland

Beckwith, Julius Ludwig, Jr. (III) — Calif.

Beeks, Edward August (I) — Va.

Bellemare, Edmund Michael (I) — Conn.
A.B. 1953, University of Bridgeport

Berger, Leonard (III) — N.Y.
B.A. 1951, Queens College

Bertram, Donald James (II) — Utah

Bettmann, Stuart Paul (III) — N.Y.
A.B. 1953, New York University

Blackwell, Jr., Theodore Fulton (IV) — D.C.
B.S. 1951, Roanoke College

Blodgett, John Russell, Jr. (I) — W.
Bowles, Donald Rutland (II) — [illegible]
A.B. 1954, Carleton College

Bulmer, Norman Kay (III) — [illegible]

Bouras, George Aristotle (III) — Calif.
B.S. 1951, Franklin and Marshall College

Boyer, Roger (IV) — Mo.
A.B. 1949, Stanford University

Bondurant, Brown Allen (I) — [illegible]
B.S. in Pharm. 1952, The George Washington University

Bour, Samuel Vladimir (III) — [illegible]
A.B. 1954, The George Washington University

Bortnick, Ronald Jack (I) — [illegible]

Brown, Charles Hamton (IV) — Me.
A.B. 1952, Lawrence College

Brown, Harry Sinder, Jr. (I) — [illegible]

Brown, Margaret Lucille (IV) — [illegible]
A.B. 1951, The George Washington University

Brubaker, James Lyman (I) — [illegible]

Bruner, Robert Singleton (II) — Md.
B.S. 1954, The George Washington University

Buchmann, Brigitte Klara (III) — Mo.
A.B. 1954, The George Washington University

Burke, John William (II) — [illegible]

Burns, David John (III) — [illegible]
A.B. 1951, Carleton College

Bingamon, Rodney William (III) — Ohio
B.S. 1954, Utah State Agricultural College

Byer, Stevenson (III) — [illegible]
B.S. 1951, M.S. 1953, The George Washington University

C

Campbell, John Darrell II (III) — D.C.
A.B. 1954, University of California at Los Angeles

Carlson, Paul Ewin (IV) — Calif.
A.B. 1954, Harvard University

Case, Lawrence Hayman (III) — Md.
A.B. 1951, Swarthmore College

Cross, Matthew John, Jr. (II) — Pa.
A.B. 1954, Johns Hopkins University

Cardinal, Albert (IV) — [illegible]
A.B. 1952, Washington and Jefferson College

Carlson, Vito John (III) — [illegible]

Clark, Gilbert Reed (III) — Md.
B.S. 1951, University of Maryland

Cole, Charles Ackerman (II) — Ohio
B.S. 1948, Ohio State University

Collins, James Lloyd, II (I) — [illegible]
B.S. 1954, University of Oklahoma

Costa, George Peter (II)
A.B. 1954, University of Pittsburgh — Pa
Cooper, Emmett Monroe (IV) — Md
Cunningham, Leslie Kenneth (III)
A.B. 1954, University of California — Calif.
Cowan, Maurice Clyde (IV) — Calif.
Cox, Dwight Wilson (III) — Calif.
B.S. 1950, Mount Union College — D.C.
Cozzarelli, James Domenick (I)
B.S. 1951, St. John's University — N.J.
Crane, Rod and Reel (I)
Crane, Roberts Hazard (III)
B.S. 1951, The George Washington University — Pa
Md
Crane, James New (III)
Crane, Jerome Henry (III)
B.S. 1951, Indiana University — N.Y.
Crane, Richard Lester (III) — Ind.
Crane, Lewis Barton (III) — Utah
B.S. 1951, Idaho State College — Idaho

D

Dance, Lowell Raymond (II)
B.S. 1951, Utah State Agricultural College — Utah
Davies, Glen Hatch (II)
B.S. 1954, Utah State Agricultural College — Utah
Davidson, Henry Warren (IV)
Dayton, John Lyle (III) — W.
B.S. 1951, Franklin and Marshall College — D.C.
Lawrence, Nathan Thomas (IV)
B.S. 1954, Bucknell University — Va.
Lazzeroni, Robert Joseph (III)
A.B. 1951, University of Maryland — Calif.
Lee, Edmund Burke (II)
A.B. 1951, Washington and Lee University — D.C.
Lee, Norman, Dallas (IV)
B.S. 1954, Hampden-Sydney College — Iran
Lee, Robert Verne (III)
Leeper, William Henry (III)
Lehnhoff, Hans Joachim (IV) — Utah
Leonard, Earl (I) — Calif.
Lesser, Paul Rich (II) — Calif.
D.C.
Libby, Joseph (III) — Maine
B.S. 1951, University of Maine — Maine
Lichtenstein, Milton (III)
B.S. 1951, Syracuse University — N.Y.
Lindsay, Samuel Mitchell (III)
B.S. 1951, Muhlenberg College — D.C.
Lindsay, Thomas Lee (III)
B.S. 1951, Roanoke College — D.C.
Lindsay, Thomas Young (IV)
B.S. 1951, Roanoke College — D.C.
Lindsay, Thomas Young Jr. (IV)
B.S. 1951, Roanoke College — D.C.
Lindsay, Thomas Young Jr. (IV)
Lindsay, Thomas Young Jr. (IV)
Lindsay, Thomas Young Jr. (IV)

Glassman, Leonard Herbert (I) N J.
B.S. 1955, Franklin and Marshall College
Glazier, Edward Harvey (III) N.Y.
B.S. 1952, Wheaton College
Glenn, James Hartman (III) D.C.
A.B. 1953, Duke University
Goodoe, Bernard (I) N.Y.
Goodsell, Neal Wylie (II) Va.
A.B. 1955, The George Washington University
Gooch, Walter Erwin (III) D.C.
A.B. 1954, The George Washington University
Graham, Kenneth Donald (IV) Wash.
B.S. 1953, University of Washington
Granger, Stephen Ireland (I) Md.
A.B. 1952, Amherst College
Gray, Ralph Richard (II) Utah
A.B. 1951, University of Utah
Greene, Katherine Virginia (II) Va.
A.B. 1947, Eastern Nazarene College
A.M. 1948, Ph.D. 1954, The George Washington University
Griffin, Charles Nasey, Jr. (I) D.C.
Grigorian, Haikaz Martiros (I) Iran
A.B. 1952, Boston University
M.S. in P.H. 1953, Columbia University

H

Haddad, John Khouri (I) N.Y.
A.B. 1953, Cornell University
M.S. 1955, University of North Carolina
Hagenbucher, John Thomas (III) N.J.
B.S. 1952, Philadelphia College of Pharmacy and Science
Hamblin, Wayne Stanton (III) Ariz.
A.B. 1950, Brigham Young University
Hamme, Claire Louise (II) N.J.
Hampshire, Alan Curtis (I) N.Y.
A.B. 1953, Amherst College
Hanache, Marie Adele (III) N.Y.
A.B. 1955, College of New Rochelle
Hand, Harold Ronald (IV) Pa.
B.S. 1952, Franklin and Marshall College
Hanson, Kermit Henry (III) Wis.
A.B. 1953, Carroll College
Hardesty, William Harriman (II) Pa.
A.B. 1954, Carleton College
Harrison, Barbara Jean (I) Fla.
B.S. 1954, University of Miami
Hennebergen, George Milton (II) Md.
B.S. 1953, University of Maryland
Herman, Elton (IV) D.C.
Herman, Maurice Arnold (I) D.C.
Hickey, Glenn Charles (I) Wis.
Hodge, Clarence Hardman (III) Calif.
Hodges, John Calvert, Jr. (IV) Fla.
A.B. 1952, Vanderbilt University
Hoge, Donald Edwin (I) Va.
A.B. 1954, University of California
Homayounpour, Mersad (II) Iran
M.S. 1953, Michigan State Normal College
Hoberek, Frederick Willis (II) N.Y.
A.B. 1954, Western Maryland College
Hoff, Richard Lee (I) Pa.
A.B. 1955, Lincoln University, Pa.
Hung, Wellington (III) D.C.
B.S. 1953, American University
Hurlburt, Ward Bullard (I) D.C.

I

Iben, Albert Bernard (I) West Va.
Iliescu, John Jr. (II)
B.S. 1950, D.D.S. 1954, University of [illegible] Pa.
Irwin, Willis Layne (III)
B.S. 1951, Grove City College Hawaii
Izawa, Edward Hiroshi (III)
A.B. 1951, University of Texas
M.S. 1952, University of Hawaii

J

Jackson, Edward William (I) Calif.
Jackson, Edwin Willard (IV) Ga.
A.B. 1952, Occidental College
Jackson, James Edwin (I) N.J.
B.S. 1952, Moorhouse College
Jacobsen, Ralph (III) West Va.
A.B. 1955, New York University
Jinguji, Masaharu Gerald (I) Mass.
B.S. 1951, College of Puget Sound
Johnson, Don Robert (I) Pa.
A.B. 1954, Princeton University
Johnson, John Andrew, Jr. (II) Miss.
B.S. 1954, Grove City College
Jones, John Paul, Jr. (II) Calif.
A.B. 1954, Carleton College
Judd, Lewis Lund (II) Pa.

K

Kahlbaugh, Richard Allen (IV) Md.
B.S. 1952, Franklin and Marshall College
Kaufman, Richard Miles (II) N.J. Penn.
A.B. 1955, The George Washington University
Kelly, John Edward (I) Conn.
Kemp, James Furman (I) Calif.
A.B. 1955, University of Utah
Kennedy, Mary Ruth (I) Fla.
A.B. 1951, Vassar College
Kent, Albert Kenneth (I) D.C. Ky.
A.B. 1954, University of California
Killen, Richard Bearman, Jr. (I) Conn.
A.B. 1955, Duke University
Kimmerling, Richard William (IV) Calif.
Kinder, Robert Samuel Lollar (I) D.C.
A.B. 1951, Brown University
King, Anthony (I) N.J.
A.B. 1951, Williams College
Kirsen, Stanley Martin (III) N.Y.
Klaif, Charles Howard (II) Md.
A.B. 1954, Syracuse University
Klawans, Alan Gabel (I)
A.B. 1955, Yale University
Klinenberg, James Robert (I) Mass. N.Y.
A.B. 1955, A.M. 1955, Johns Hopkins University
Knose, Thomas Henry (II) Pa.
Kosow, Charles (I)
A.B. 1954, New York University
Katz, Herbert Jay (IV) N.Y.
A.B. 1954, The George Washington University
Krebsz, Werner (II)
Keller, Lewis Henry (I)
A.B. 1955, Hamilton College

Kunkle, Frank Albert (I) Ohio
Kyle, Peter John (I) D.C.
B.S. 1952, The George Washington University

L

Lardaro, Stephen Arthur (I)
Latour, Paul Leonard (I) N.J.
Laughlin, Francis John (I) Md.
A.B. 1948, Columbia University
Lazenoff, Jerry (I) N.Y.
Lewis, Sarah Pamelia (IV) D.C.
A.B. 1952, Wells College Md.
Lipscomb, Thomas Price (II)
Lester, Marion Archer (IV) D.C.
A.B. 1952, Montana State University Mont.
Levine, Barbara Ruth (I)
Levy, Stewart Lawson (II) Va.
A.B. 1952, The George Washington University Md.
Lee, Robert Clancy, Jr. (I)
Lieb, James Andrew (II) Calif.
B.S. 1954, Biola College Mass.
Lindgren, Ernest Waldemar (II)
B.S. 1954, The George Washington University Va.
Lisa, George (I)
A.B. 1954, The George Washington University D.C.
Lisanby, Ralph J. (II)
Lockhart, Wayne Rolfe (IV) Idaho
B.S. 1954, University of Idaho
Long, Samuel Eugene (I) Mass.
B.S. 1952, Idaho College
Lowe, Franklin Gerald (IV) N.Y.
A.B. 1952, Wagner Memorial Lutheran College
Lowe, Joseph Allen, Jr. (I) D.C.
A.B. 1954, The George Washington University
Lowrey, Thomas Jay (I) Ala.
B.S. 1954, University of Alabama
Lugo, Angelo G. (III) Idaho
B.S. 1953, University of Idaho

M

Magruder, Robert Joseph (IV) D.C.
A.B. 1952, Georgetown University
Maguire, Robert Lancaster (IV)
B.S. 1953, Michigan State College Mich.
Mahler, Francis Raymond (I)
Malcolm, Joel Gerald (III) Pa.
A.B. 1952, American College
Manne, Leon (III) N.Y.
A.B. 1952, Columbia University
Marcy, Thomas Perkins (IV)
Marsh, Robert (IV) N.J.
Martin, Robert Dunseath (I)
Martin, Robert John (IV) N.J.
Mason, Marion Lee (III)
Mathews, Frederick Vermont N.J.
A.B. 1952, University of Vermont
Mathews, Robert Lincoln (III) Calif.
A.B. 1952, Occidental College
Mathias, Harry Leonard (I)
Mathias, Joseph Lawrence (III) Mass.
A.B. 1952, University of Texas
Mathias, Robert Walter (II) Md.
A.B. 1952, The George Washington University
Matthews, Dean Reginald Paul (IV) Utah
A.B. 1952, Utah State Agricultural College
Mayo, Reginald Paul (IV)
A.B. 1952, Bowdoin College Maine

McNash, James Nelson (III) W.Va.
A.B. 1952, West Virginia University
McNeal, John Enright (III) Va.
A.B. 1952, University of Miami
Meek, Anthony Matthew (I) N.Y.
B.S. 1954, Wagner Memorial Lutheran College
Miller, Allen Hamilton (I) Wash. D.C.
Miller, George Francis (II) Calif.
Miller, Richard Lawrence (I) Pa.
Miller, Robert Allen (IV)
A.B. 1952, Duke University Idaho
Mountsinger, Harold Robert (IV) Md.
Mundell, George Hunt, Jr. (II)
B.S. 1954, Washington and Lee University Ill.
Muir, William Raymond, Jr. (II) Minn.
A.B. 1952, Washington University
Mulso, Felton Lawson (IV)
A.B. 1952, Concordia College Pa.
B.S. 1954, University of North Dakota N.Y.
Munnemaker, Robert Bruce (II) Mass.
B.S. 1952, University of Maryland Wis.
Munnemaker, William Fitzgerald (III) Calif.
A.B. 1952, University of Virginia D.C.
Murdoch, Everett Cole (II) Calif.
A.B. 1951, Vanderbilt University
Murrell, Thomas Matthew (I)
B.S. 1951, University of Wisconsin
Mueller, Stanley Adolph Julius, Jr. (IV)
A.B. 1952, University of California
Mullins, Charles Edward (II)
A.B. 1954, Princeton University
Mutz, Sterling Burtt (IV)

N

Nahmias, Andre Joseph (III) Mich.
A.B. 1950, A.M. 1952, University of Texas
M.P.H. 1954, University of Michigan
Nelson, Erwin Jean (II) Utah
B.S. 1954, Brigham Young University
Nelson, Robert Norman (IV) N.D.
A.B. 1952, B.S. in Med. 1954, University of North Dakota
Nesbit, Mark Edwin (I) Wis.
B.S. 1953, University of Wisconsin
Nixon, Charles Richard (III) Idaho
B.S. 1950, Idaho State College
North, Elmer Floyd, Jr. (IV) Md.
A.B. 1952, Maryland University
Norton, Robert Reed (III) N.M.

O

Ohrer, Margaret Pooly (II) D.C.
A.B. 1945, The George Washington University
Olson, Harlan Ellings (II) Va.
A.B. 1953, The George Washington University
Olson, Harding William (I) N.Y.
B.S. 1951, Kent State University
Olson, Ray Andreas (IV) Calif.
Ong, Beale Hinkle (I) Md.
A.B. 1952, The George Washington University
Ottenberg, Ronald (I) D.C.

P

Pabon-Gomez, Pedro Mario (I) Puerto Rico
A.B. 1952, Polytechnic Institute of Puerto Rico

Page, Leonard Daniel (III) N.Y.
B.S. 1953, The George Washington University

Pappas, Stephen S. (IV) D.C.
B.S. 1952, The George Washington University

Parker, Cedric Lewis (II) Calif.
B.S. 1954, University of Utah

Parry, Robert Marr (I) Utah
B.S. 1954, Brigham Young University

Pennewell, Richard Livingston (IV) Va.
A.B. 1941, The George Washington University

Perrine, Diane Patricia (I) Calif.
A.B. 1955, San Francisco State College

Peterson, Kent Albemarle (I) Md.

Phillips, Donald Raymond (I) Mass.
A.B. 1953, Bowdoin College

Phillips, Robert Dean (IV) Ala.
B.S. 1952, Howard College

Piper, Jurgen Francis (I) D.C.

Pittaluga, Joseph Vincent (I) D.C.
B.S. in Pharm. 1938, The George Washington University

Plume, Leonard Irwin (III) N.Y.
A.B. 1953, Harvard University

Pondelick, Tim (II) Mich.
B.S. 1951, Michigan State College

Power, William Lloyd (I) Md.
A.B. 1951, Williams College

Pollock, Joseph Jordan (III) D.C.
B.S. 1956, Grove City College

Pomeroy, Frederick Cecil (I) D.C.

Porter, Marvin John (II) Calif.
A.B. 1954, Stanford University

Powell, William Alfred (I) D.C.
A.B. 1951, Ohio Wesleyan University
A.M. 1952, Williams College

Psomiadis, Stylianos Demetrios (III) Greece
B.S. 1951, Wagner Memorial Lutheran College
A.M. 1954, Ph.D. 1955, The George Washington University

Publicover, Lewis Cmdr. (II) N.Y.
A.B. 1934, Columbia University

Purcell, Theodore Robert (I) Calif.
A.B. 1950, B.S. 1951, University of California

R

Radenacher, Raymond Julius (II) Mont.
A.B. 1952, Montana State University

Rashid, James Edwin (II) Wash.
A.B. 1951, Brigham Young University

Ratner, Perry Rodney (II) Va.

Raymond, Mark Bradford (IV) Md.
B.S. 1951, University of Maryland

Raymond, Rodney Jarrad (III) D.C.
B.S. 1953, University of Scranton

Reed, Rodney Hammond (II) Colo.
B.S. 1954, The George Washington University

Reid, Richard Harold (II) Calif.
A.B. 1951, University of California

Reis, Henry Harold, Jr. (IV) Calif.

Rese, Robert Leonard (II) N.J.

Reserve, John Howard (II) Ind.
A.B. 1954, Evansville College

Rhoads, John Charles (IV) Pa.
B.S. 1951, St. Francis College

Rice, Richard Bradley (IV) Va.
A.B. 1954, University of California at Los Angeles

Richey, Drake (I) W.Va.
A.B. 1948, West Virginia University

Richman, Donald William (IV) Calif.

Rivera, George Leonard (IV) N.Y.
A.B. 1952, Syracuse University

Roth, David Nelson (III) Calif.
A.B. 1948, University of Chicago

Robinson, Rollin Douglas (I) Idaho
B.S. 1951, Brigham Young University

Roman, Manuel (III) N.Y.
A.B. 1954, New York University

Rosario, Peter Robert (I) P.R.
A.B. 1951, New York University
A.M. 1955, Columbia University

S

Schatten, Ivan Charles (II) Pa.
B.S. 1950, University of Pittsburgh

Scherer, Edward (I) Pa.
B.S. 1955, Haverford College

Schneider, Vernon (IV)
A.B. 1951, New York University
M.S. 1954, Oregon State College
Ph.D. 1957, California Institute of Technology Calif.

Schneider, Gilbert Robert (II) Calif.
A.B. 1955, Stanford University

Scott, Gordon Eugene (I) N.J.
B.S. 1953, University of California

Seidel, Leroy Allen (II) Pa.
B.S. 1955, Rutgers University

Semerenko, Clement Florence (III) N.J.
B.S. 1951, The George Washington University

Shannon, Roger Hall (IV) D.C.
A.B. 1951, Dartmouth University

Shaffer, Albert Lester, II (IV) Md.
B.S. 1951, Franklin and Marshall College N.Y.

Shank, Marcus Boyd (I) Ohio
Shapiro, George Louis (I)
A.B. 1954, Lafayette College W.Va.

Shaw, Ernest James (V) W.Va.
B.S. 1952, Wagner Reserve University Wis.

Shaff, Robert Elsbeth (II) Va.
A.B. 1955, West Virginia University N.J.

Sletze, Darrell Roger (II) N.J.
B.S. 1954, University of Wisconsin Calif.

Smith, Donald Forsythe (II) Mo.

Smith, John Joseph (I)
A.B. 1942, Seton Hall University Calif.

Smith, Mansfield Perry Williams (IV) Conn.

Smith, Ronald Walter (III)
B.S. 1953, University of Maryland

Smith, George Fayette (II) Iowa

Snyder, Harold Lee (IV)
B.S. 1952, Northwestern University Pa.

Somers, Pierce (III)
A.B. 1954, Temple University
M.S. 1953, University of Pennsylvania N.J.

Spangler, Ronald Vere, Jr. (IV) Pa.
A.B. 1948, Duke University

Spencer, Edmund Allen (I)
A.B. 1950, Williams College Okla.

Spessard, Thomas Andrew (IV)
B.S. 1951, University of Pittsburgh D.C.

Stanislawski, Richard Joseph (II)
A.B. 1955, Grove City College Va.

Stark, Jane Hart (II)
B.S. 1954, The George Washington University

Stark, James Logan (IV)
A.B. 1955, The George Washington University

Stoothman, Robert Cabot (I)
A.B. 1944, University of Delaware — Del
Sullivan, Robert Claude (II) — Md
A.B. 1944, Western Maryland College
Swanson, Courtland Rae (IV) — Utah
Sweeney, Wendell Reynolds (III) — N Y
A.B. 1944, Columbia University

T

Tang, Tze-Tung (II) — China
A.B. 1944, National Central University, China
B.S. 1947, St. Mary's College
M.S. 1948, Ph.D. 1954, The George Washington University
Taylor, Eugene Field (I) — Calif
Lieutenant, Radiology (II) — Iran
B.S. 1950, Bethany College
Taylor, Catherine Louise (II)
A.B. 1944, Swarthmore College — Conn
Thompson, Fred Brownell (II)
A.B. 1944, The George Washington University — Ga
Thompson, Robert Vaughn (II)
A.B. 1944, William Jewell College — Mo
Thompson, Charles Hilary (II) — Calif
A.B. 1944, The George Washington University — D C
Thurston, Newton Theodore (IV)
B.S. 1948, Duke University — Fla
Tyer, George Scott (II)
A.B. 1944, University of California at Los Angeles — Calif

V

Van St. Cate, Francis Rene (III)
Van Eyken, Donald Bell (I) — Calif
A.B. 1950, University of California at Los Angeles — Va
Vasquez, Jose Bernardino (IV) — Puerto Rico
B.S. 1948, Morningside College
Vere Nowell, Roald (III) — Norway
B.S. 1951, American University

W

Wade, Ronald Ralph, Jr. (I)
B.S. 1952, University of Michigan — Ohio
Walker, Jean Rennell (I) — D C
A.B. 1944, Marion Berryman (II) — N.J.
Randolph-Macon Woman's College
Ward, Eva Lawrence (I) — Conn
A.B. 1944, Connecticut College for Women
Warnick, Louis Frederick, Jr. (III) — Calif
A.B. 1944, Occidental College

Warnick, Louis Frederick, Jr. (III)
A.B. 1944, The George Washington University — Md
Weeks, Lemuel Hubbard (IV) — Mass
B.S. 1951, University of Massachusetts
White, George Edwards (III) — Md
A.B. 1944, The George Washington University
Wisner, Donald Wallis (III) — D C
A.B. 1950, University of Illinois
Wittcamp, Henry Weiden (IV) — D C
B.S. 1952, The George Washington University
Wolken, Lilly Daniel (IV) — Wash
Williams, Kathryn Anne (IV) — Pa
B.S. 1951, University of Pittsburgh
Williams, Melvin Garrison (I) — Pa
Williams, Robert Lorain (IV) — D C
Williams, Willard Leroy (I) — Calif
B.S. 1947, Whittier College
Williams, Henry Edward, Jr. (II) — Pa
B.S. 1951, Temple University
Williamson, Laurence Patrick (II) — Va
B.S. 1944, The George Washington University
Woodson, James Bond (III) — D C
B.S. 1944, Swarthmore College
Woody, Russell Harlan, Jr. (III) — Va
A.B. 1944, The George Washington University
Woy, Theodore Charles (II) — Calif

Y

Yanowitz, Gilbert Herbert (IV) — N Y
A.B. 1952, College of the City of New York
Yee, Jason Fabe Gong (II) — Calif
Yee, Paul Ming Hsiang (I) — China
B.S. 1951, University of Redlands
Young, Lee Sanders (I) — N Y
A.B. 1944, Lafayette College
Yuspa, Carmen Gennaro (I) — Calif
Yuspa, Sorrell Peter (III) — Pa
B.S. 1944, University of Pittsburgh

Z

Zahn, Robert Lloyd (III) — Mo
B.S. 1951, Missouri Valley College
Zavadil, Lawrence Irving (IV) — D C
Ziegler, Rolland Charles (III) — Wis
B.S. 1945, The George Washington University
Zuccaro, Nicholas Louis (III) — D C
B.S. 1951, Georgetown University

SUMMARIES OF REGISTRATION

1955–56

Number of Registrants

Class entering September 1955	[illegible]
Class entering September 1954	[illegible]
Class entering September 1953	[illegible]
Class entering September 1952	[illegible]
Total	372

Geographical Distribution of Students

Alabama	2	New Mexico	35
Arizona	3	New York	1
California	46	North Carolina	1
Colorado	1	North Dakota	5
Connecticut	8	Ohio	1
Delaware	1	Oklahoma	25
District of Columbia	69	Pennsylvania	1
Florida	8	Rhode Island	12
Georgia	2	Utah	21
Idaho	7	Virginia	7
Illinois	3	Washington	4
Indiana	2	West Virginia	13
Kansas	2	Wisconsin	1
Maine	3	Canada	3
Maryland	34	China	1
Massachusetts	5	Greece	1
Michigan	5	Guatemala	1
Minnesota	2	Hawaii	5
Mississippi	1	Iran	1
Missouri	3	Norway	3
Montana	3	Puerto Rico	1
New Jersey	17	Samoa	1

Graduates of Colleges Registered in the School of Medicine

Alabama, University of	1	California, University of	5
American University	2	California, University of, at Los Angeles	6
Amherst College	3	Carleton College	1
Arizona State College, Tempe	1	Carroll College	1
Barnes College	1	Catholic University of America	1
Bethany College	1	Chicago, University of	6
Boston, University of	1	Columbia University	1
Bowdoin College	3	Concordia College	1
Bridgeport, University of	1	Concordia Theological Seminary	2
Brigham Young University	6	Cornell University	4
Brown University	1	Dartmouth College	1
California Institute of Technology	1		

Delaware, University of	1
Duke University	10
Eastern Nazarene College	1
Emory University	1
Florida, University of	1
Franklin and Marshall College	1
Georgetown University	7
Grove City College	4
Hamilton College	4
Harvard University	1
Haverford College	3
Hawaii, University of	2
Howard College	1
Humboldt State College	1
Idaho State College	1
Illinois, University of	2
Indiana, University of	2
Indiana University	2
Johns Hopkins University	1
Kansas University of	2
Kent State University	1
Lafayette College	1
Lehigh University	4
Loyola University	2
Maine, University of	1
Maryland, University of	2
Medical University	8
Miami, University of	2
Michigan State College	1
Michigan State Normal College	2
Minnesota, University of	1
Missouri, University of	2
Morningside College	1
Mount Union College	2
Muhlenberg College	1
Newberry College	1
North Central University, Minn.	1
North Pacific College of	1
New York College of the City of	1
New York University	1
North Carolina, University of	7
North Dakota, University of	2
Northwestern University	2
Oberlin College	1
Ohio State University	3
Ohio University	1
Ohio Wesleyan University	1
Oklahoma City University	1
Oregon, University of	1
Pacific Union College	1
Pennsylvania College	1
Pennsylvania, University of	1
Philadelphia College of Pharmacy and Science	1
Pittsburgh, University of	5
Polytechnic Institute of Puerto Rico	1
Princeton University	3
Providence College	1
Puget Sound, College of	1
Queens College	1
Redlands, University of	1
Ripon College	1
Roanoke College	1
Rutgers University	2
St. Francis College	1
St. John's University	1
St. Mary's College	1
San Francisco State College	1
San Jose State College	1
Scranton, University of	1
Seton Hall University	1
Southern California, University of	1
Stanford University	8
Swarthmore College	3
Syracuse University	2
Taylor University	1
Temple University	1
Texas, University of	4
Utah, University of	3
Utah State Agricultural College	3
Vanderbilt University	2
Vassar College	1
Vermont, University of	1
Virginia, University of	1
Wagner Memorial Lutheran College	1
Washington and Jefferson College	1
Washington and Lee University	2
Washington University	1
Washington, University of	1
Wellesley College	1
Wells College	1
Western Maryland College	1
Western Reserve University	2
West Virginia University	4
West Virginia Wesleyan College	1
Wheaton College	1
Whitworth College	1
Williams College	5
Wisconsin, University of	4
Yale University	2
Yankton College	1
Number of College Graduates	283
Number of Colleges Represented	124

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CALENDAR

1956–57

Date	Day	Occasion
1956		
FALL SEMESTER		
Sept. 20 and 21	Thursday and Friday	Registration
Sept. 24	Monday	Fall semester begins
Oct. 20	Saturday	Fall Convocation
Nov. 12	Monday	Veterans Day. Holiday
Nov. 22–24	Thursday through Saturday	Thanksgiving recess
Dec. 20–Jan. 2	Thursday through Wednesday	Christmas recess
1957		
Jan. 3	Thursday	Classes resume Last day for receiving dissertations of candidates for the degree of Doctor of Juridical Science to be conferred the following June
Jan. 21–29	Monday through Tuesday	Examination period
SPRING SEMESTER		
Jan. 31 and Feb 1	Thursday and Friday	Registration
Feb. 4	Monday	Spring semester begins
Feb. 22	Friday	Winter Convocation. Holiday
April 19–24	Friday through Wednesday	Easter recess
May 20–28	Monday through Tuesday	Spring semester examination period
June 2	Sunday	Baccalaureate Sermon
June 5	Wednesday	Commencement
SUMMER SESSIONS*		

* Dates to be announced

THE UNIVERSITY

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Lloyd Bennett Wilson

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Louis Harkey Mayo, B.S., LL.B., J.S.D., *Assistant Dean of the Law School*
David Benson Weaver, A.B., LL.B., *Director of Continuing Legal Education*

Administrative Assistants

Anna Marie Bischoff, A.B., *Recording Secretary of the Law School*
Bertha Margarethe Rothe, A.M., B.S. in L.S., LL.B., *Assistant Librarian in Charge of the Law Library*
Ethel Casey Schreiner, A.B., *Secretary to the Dean of the Law School*
Pauline Bogsch, *Secretary in the Law School*

THE UNIVERSITY

History and Organization

The idea of a university in the Capital of the Nation was sponsored by George Washington, who during his public life urged the establishment of such an institution and who in his will left fifty shares of stock in the Potomac (Canal) Company for the endowment of a university to be established in the District of Columbia "to which the youth of fortune and talents from all parts thereof might be sent for the completion of their Education in all the branches of polite literature;—in arts and Sciences,—in acquiring knowledge in the principles of Politics & good Government".

The George Washington University operates under a charter granted by an act of Congress of February 9, 1821, to Columbian College in the District of Columbia. In 1873 the name was changed to "Columbian University" and in 1904 to "The George Washington University".

The University as it is now organized consists of the Junior College, comprising the work of the freshman and sophomore years; Columbian College, the senior college of liberal arts, which offers work leading to the Bachelor's and Master's degrees; the Graduate Council, which offers work leading to the degree of Doctor of Philosophy; the professional schools, which include Medicine, Law, Engineering, Pharmacy, Education, and Government; the College of General Studies; the Division of University Students; the Division of Special Students; the Division of Air Science; and the Summer Sessions.

Academic Status

The George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools. This is important to students who wish to transfer credits from one institution to another.

The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board.

The Law School is a charter member of the Association of American Law Schools and is approved by the Section of Legal Education and Admissions to the Bar of the American Bar Association.

Location

The George Washington University is in downtown Washington, four blocks west of the White House and east of the Potomac River with its extensive parkway. Within a few blocks are the buildings housing the offices of many of the departments of the Government, including the Department of State, the Department of the Treasury, the Department of Justice, the Department of the Interior, the Department of Agriculture, the Department of Commerce, and the Department of Labor. Also readily accessible are the Capitol, the Library of Congress, the National Archives, the Supreme Court, and other federal courts.

THE LAW SCHOOL

THE LAW SCHOOL

THE FACULTY AND STAFF OF INSTRUCTION •

CLOYD HECK MARVIN, Ph.D., LL.D., *President of the University*
OSWALD SYMISTER COLCLOUGH, B.S., LL.B., LL.D., *Dean of Faculties*
JOHN THEODORE FEY, LL.B., M.B.A., J.S.D., *Dean of the Law School*
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Professor Emeritus of Law
A.B. 1903, University of the South. LL.B. 1906, Georgetown University.

GILBERT LEWIS HALL
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A.B. 1899, Swarthmore College; LL.B. 1918, The George Washington University.

JOHN WILMER LATIMER
Professor Emeritus of Law
LL.B. 1897, The George Washington University.

WALTER LEWIS MOLL
Professor Emeritus of Law
A.B. 1898, Concordia College (Ind.); Graduate 1899, Concordia Theological Seminary (St. Louis); LL.B. 1924, Indiana University; S.J.D. 1926, Harvard University.

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Professor Emeritus of Law
B.S. 1906, University of Minnesota; LL.B. 1911, S.J.D. 1924, Harvard University.

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JOHN PATRICK BURKE
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• The President of the University, the Dean of Faculties, the Dean and Assistant Deans of the Law School, the Registrar of the University, the Director of Admissions of the University, Professors Emeriti, Professors, Associate Professors, and Assistant Professors constitute the Faculty.

OSWALD SYMISTER COLCLOUGH
Professor of Law, Dean of Faculties
B.S. 1922, United States Naval Academy, LL.B. 1935, The George Washington University, LL.D. 1946, Muhlenberg College.

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Ph.M. 1911, University of Wisconsin; J.D. 1934, University of Michigan.

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A.B. 1921, LL.B. 1923, Dalhousie University, LL.M. 1924, S.J.D. 1929, Harvard University.

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Lecturer in Law
B.S.E. 1921, M.S. 1924, University of Michigan; LL.B. 1951, The George Washington University.

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Lecturer in Law
LL.B. 1916, University of Texas.

* On sabbatical leave fall semester 1956-57.

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Professorial Lecturer in Law
A.B. 1936, Cornell University; LL.B. 1939, S.J.D. 1942, Brooklyn Law School; LL.M. 1948, The George Washington University.

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A.B. 1942, LL.B. 1943, The George Washington University.

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Associate Professor of Law, Assistant Dean of the Law School
B.S. 1937, United States Naval Academy; LL.B. 1942, University of Virginia; J.S.D. 1943, Yale University.

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* On leave of absence fall semester 1964-65.

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A.B. 1927, LL.B. 1930, Fordham University, LL.M. 1951, S.J.D. 1954, Georgetown University

COMMITTEES *

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* The Faculty of the University, the Dean of Faculties, and the Dean and Assistant Deans of the Law School are members ex officio of all committees.

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GENERAL INFORMATION

Location in the Nation's Capital

The George Washington University Law School, now in its 91st year, is the oldest law school in the District of Columbia. The School took part as a charter member in 1900 in the organization of the Association of American Law Schools and it has been an active member of the Association since that time. It is approved by the Section of Legal Education and Admissions to the Bar of the American Bar Association.

National University, which has had an important place in legal education in the District of Columbia since 1869, was merged into The George Washington University in August 1954.

Of special significance is the location of the Law School in the Nation's Capital, the focal point of the law in action, both American and international. The work of the School goes on in this environment, presenting a unique opportunity for observation and study of federal agencies—judicial, legislative, and administrative. Readily accessible are the Supreme Court of the United States, the federal trial and appellate courts of the District of Columbia, and, in addition, federal courts of special jurisdiction, such as the United States Court of Claims, the United States Court of Customs and Patent Appeals, and the Tax Court of the United States. Current federal legislation can be studied as it is con-

sidered by Congressional committees and as it comes up for debate on the floor of the House of Representatives and the Senate. It is with respect to the federal administrative agencies that the students here in Washington have matchless opportunities for study and observation. They can attend informal and formal hearings of these agencies and can obtain from the docket sections complete records of administrative adjudication in specific cases. Illustrative of such federal agencies are the Interstate Commerce Commission and the Civil Aeronautics Board in the field of transportation; the Federal Trade Commission in the field of trade regulation; the Securities and Exchange Commission in the field of security issues and corporate finance; the National Labor Relations Board in the field of labor-management relations; the United States Patent Office in the field of patent law; the Federal Power Commission in the field of water, natural gas, and electric power; and the Federal Communications Commission in the field of radio and television.

Supplementing these environmental advantages of law in action are the exceptional research library collections in the Library of Congress, in the various departments of the Federal Government, and in the libraries of the headquarters of national and international organizations located in Washington. The notable library of the Carnegie Foundation for International Peace has been acquired by The George Washington University for use of research students in international and comparative law, fields with respect to which Washington has come to be called "The Capital of the World".

The years of residence at law school are years of participation in the life of the community, which in the case of the George Washington University Law School, is the government of the United States by law. As a consequence, the study of law takes on added meaning, whether the goal be government service or practice, general or specialized.

Objectives

The primary purpose of the Law School is to prepare men and women to meet the needs of society in the many fields of law, public and private. These needs call not only for technical skill but also for responsible leadership in the development of the law and the administration of justice. In fulfilling these responsibilities the Law School offers: (1) a program of study in preparation for the practice of law; (2) programs of study and research on the graduate level for foreign students as well as for American; (3) a continuing legal education program for members of the bar; (4) institutes and forums on current topics in domestic and foreign law; (5) the publication of a law journal containing the results of research in public law; and (6) the encouragement of student professional co-curricular activities.

Programs of Study

Traditionally the Law School has been national in the geographic distribution of its students. At the present time, men and women holding baccalaureate degrees from more than three hundred colleges and universities come from the forty-eight states, the territories, and several foreign countries to comprise the student body. As a consequence the programs of study leading to the degrees of Bachelor of Laws and Juris Doctor have been planned to provide instruction and training for the practice of law wherever the Anglo-American legal system obtains.

Graduate work leading to the degrees of Master of Laws and Doctor of Juridical Science is offered for those desiring further study and research in specialized fields of law.

Provision is made for advanced study by members of the bar who do not desire to register as candidates for degrees. Lawyers may take courses for this purpose either as unclassified graduate students or as continuing legal education students.

Graduate work is offered also to meet the needs of lawyers who come from countries whose legal systems are not based on the English law. There are two programs of study, one leading to the degree of Master of Comparative Law for lawyers planning to return to their own countries, and the other leading to the degree of Master of Comparative Law (American Practice) for lawyers planning to remain in this country for the practice of law.

Organization of the Curriculum

The curriculum is organized so that students may enter the Law School at the beginning of the fall or spring semester of the academic year, or at the beginning of the summer term.

Morning and Evening Divisions

The School maintains an evening division. The evening division conforms to the standards of the morning division and has the same teaching staff.

Hours of Instruction

Morning sections: Monday through Friday, 9:10 A.M. to 1:00 P.M. Trial Practice Court: Saturday, 9:30 to 11:30 A.M.

Evening sections: Monday through Friday, 5:50 to 7:40 P.M.

The Library

The Law Library of 48,700 volumes contains the official reports of the decisions of the courts of last resort of all states prior to the National Reporter System, and of some states complete to date; the National Re-

porter System, complete; the reports of the United States Supreme Court and lower federal courts, and the reports of federal administrative agencies; Shepard's Citations for the units of the Reporter System; the English Reports, Full Reprint; the English Law Reports; the Times Law Reports; the Dominion Law Reports; the United States statutes and codes; complete sets of statutes of all the states; the English statutes; the principal English and American digests and encyclopedias; collections of special reports and annotated cases; United Nations documents; leading textbooks and treatises; and practically complete sets of about 150 legal periodicals. A section of the library, consisting of books acquired from National University, is known as the National University Law Collection.

The international law collection, formerly the library of the Carnegie Endowment for International Peace, is available to law students.

The Library, which is on the fourth floor of Stockton Hall, is open from 9:00 A.M. to 10:00 P.M., Monday through Friday; from 9:00 A.M. to 5:00 P.M. on Saturday; and from 2:00 to 6:00 P.M. on Sunday. Books and other materials do not circulate and must be used in the library.

The Law Review

The George Washington Law Review, published by the University, is edited and managed by students of the Law School under the supervision of faculty advisers. It is devoted exclusively to state and federal public law. The location of the University in the National Capital, where the primary sources of federal public law may be observed in operation, affords an unexcelled opportunity for specialization in this field.

The *Review* organization includes a faculty editor-in-chief, an associate faculty editor, a faculty board of advisory editors, a board of departmental advisory editors, and a board of student editors. The student editors are chosen each year on the basis of scholarship.

The Student Bar Association

Every student in the Law School is a member of the Student Bar Association, which is organized to enable students to become better acquainted with problems of the profession, to foster professional ideals, and to bring about closer contact with members of the profession engaged in active practice of the law.

The work of the Student Bar Association is carried on by various committees and by group and general meetings of a professional and social nature. From time to time lectures are given by outstanding authorities on legal and professional problems.

An important activity is the Van Vleck Case Club Competition, which provides an opportunity for training in appellate advocacy. First and second year students participate as contestants before courts composed of members of the Faculty and the local bar. Senior law students of the Case Club also sit as judges. The final argument is held before a court composed of distinguished federal judges.

Order of the Coif

The Order of the Coif, a national honor society with chapters in over forty law schools, aims "to foster a spirit of careful study and to mark in a fitting manner those who have attained a high grade of scholarship." The George Washington University Chapter was established in 1926. Members are elected each year from the highest-ranking 10 per cent of the graduating class of the Law School.

ADMISSION

Application for Admission

The Law School, as other colleges, schools, and divisions of the University, except the Division of Air Science, is coeducational.

An applicant for admission must obtain from the Office of the Director of Admissions of the University an application blank which he must fill out completely and return with the application fee of $3.

Two recent photographs with the applicant's signature must accompany the blank.

To insure prompt action, applications should be filed not later than August 1 for the fall semester, January 1 for the spring semester, and May 1 for the summer sessions.

Requirements concerning records of higher institutions previously attended are set forth on the sheet attached to the application blank.

Attendance at classes is limited to students registered for credit. "Auditing" classes is not permitted.

Requirements for Admission

For the Degrees of Bachelor of Laws and Juris Doctor

Bachelor of Laws.—A Bachelor of Arts or equivalent degree awarded upon completion of a four year course in an approved college or university is required. All pre-legal work must be of a satisfactory quality and distribution. No student will be admitted who has been in attendance at another law school and who is ineligible to return to that school in good standing. From the applicants, a selection will be made by the Committee on Admissions.

Juris Doctor.—A student does not register as a candidate for this degree until his last year in the Law School. For details, see pages 28–29.

ADVANCED STANDING

Advanced standing toward the degree of Bachelor of Laws will be granted only for work successfully completed in other law schools which are members of the Association of American Law Schools. However, credits will not be recognized in excess of those which might be obtained in a similar period in this Law School.

Advanced standing will not be granted for law work already counted toward the Bachelor of Arts or other pre-legal degree.

Advanced standing toward the degree of Juris Doctor will not be granted.

For the Graduate Degrees

Candidates for graduate degrees must be accepted by the Committee on Graduate Studies.

*Master of Laws.**—A Bachelor of Arts or equivalent degree from an approved college or university and a Bachelor of Laws or equivalent degree from a member school of the Association of American Law Schools are required. Candidates for admission must have attained a B average on all work done for the Bachelor of Laws degree, except that, at the discretion of the Committee on Graduate Studies, applicants otherwise eligible may be admitted on proof of experience and attainment as an alternative. Advanced standing will not be granted for credits earned while a candidate for the first degree in law. Credits earned as an unclassified student will not be applicable toward meeting the requirements of the degree unless specific provision therefor is included in the letter of admission.

Master of Comparative Law and *Master of Comparative Law (American Practice).*—The following are required: (1) the successful completion of and graduation from a course in arts, philosophy, letters, or sciences, equivalent to graduation from a gymnasium, lycee, or licco, and (2) graduation in law from a recognized foreign university where training was in Civil Law.

Doctor of Juridical Science.—The following are required: a Bachelor of Arts or equivalent degree from an approved college or university and a Bachelor of Laws or equivalent degree, earned with high rank, from a member school of the Association of American Law Schools, and outstanding capacity for scholarly work in the field of law.

* One-half the work necessary for graduation from an approved college or university may be accepted as satisfying the admission requirements for pre-legal work, provided the applicant completed not less than twenty months of satisfactory service in the armed forces of the United States during World War II and prior to the beginning of the 1945-46 fall semester.

Unclassified Students

A person who is in good standing as a degree candidate in another law school which is a member of the Association of American Law Schools may, at the discretion of the Dean, be admitted as an unclassified student in order to earn credits for transfer to the other law school.

A person who is a member of the bar or a person, not a member of the bar, who is a graduate of a member school of the Association of American Law Schools may, at the discretion of the Dean, be admitted as an unclassified student.

Unclassified students are required to participate in the work of the course and take examinations. Courses taken by unclassified students will not be credited toward degrees at this Law School.

Continuing Legal Education Students

A simplified admission and registration procedure is provided for members of the bar desiring to register as continuing legal education students to take courses on a non-credit basis. Members of the bar desiring to register as degree candidates or as unclassified graduate students should file the regular application for admission form.

REGISTRATION

Before attending classes each student must present himself in person for registration. No student will be registered in the Law School until proper credentials have been filed and approved (see "Admission", *above*).

Registration is for the semester or session only.

A late-registration fee of $5 will be charged each student who is permitted to register after the regular registration days.

Registration may be changed only with the permission of the Dean.

FEES AND FINANCIAL REGULATIONS

[illegible] for [illegible] each applicant for admission, non-refundable $5.00

[illegible] for each semester hour for which the student registers 12.00

[illegible] including the final examinations 5.00

[illegible] of any kind charged except the [illegible] 5.00

[illegible] 25.00

[illegible] for early graduation 25.00

[illegible] each student who fails to register within the [illegible] 5.00

[illegible] for the degree of Doctor of Juridical [illegible] 5.00

[illegible] 10.00

Service fee, charged each student for late payment of tuition, see "Payment of Fees" 1.00

Reinstatement fee, charged each student who is reinstated after being suspended for delinquency in fees. 5.00

Registration in the University entitles each student to the following University privileges: (1) the issuance of one certified transcript of record, if and when desired; (2) the services of the Placement Office; (3) the use of University library facilities, except as otherwise designated; (4) gymnasium privileges; (5) admission to all athletic contests, unless otherwise specified; (6) subscription to the *University Hatchet*, the student newspaper; (7) admission to University debates; (8) medical attention and hospital services as described under "Health Administration", pages 27–28. These privileges, however, with the exception of the issuance of transcripts, terminate, and a student is no longer in residence, when he withdraws or is dismissed from the University.

Payment of Fees

All fees are payable at the Office of the Cashier, 725 Twenty-first Street NW. No student is permitted to complete registration or to attend classes until all fees are paid. Fees for each semester are due and payable in advance at the time of registration.

Subject to the approval of the Treasurer, a student may sign a contract for semester charges, except for fees payable in advance, permitting payments as follows:

Fall Semester.—One third at the time of registration; one third on November 5; one third on December 3.

Spring Semester.—One third at the time of registration; one third on March 4; one third on April 3.

A student who fails to meet payments when due but who pays his fees on or before the fifteenth of the month in which payment is due is charged a service fee of $1. A student who fails to meet payments by the fifteenth of the month in which payment is due will be automatically suspended and may not attend classes until he has been officially reinstated and has paid all accrued fees and a reinstatement fee of $5.

A student suspended for failure to meet payments when due may not be reinstated for the semester after two weeks from the date of suspension. Applications for reinstatement are to be made to the Office of the Cashier.

Withdrawals and Refunds

Application for withdrawal from the University or for change in class schedule must be made in person or in writing to the Dean. Notification to an instructor is not an acceptable notice.

In authorized withdrawals and changes in schedules, financial adjustments will be made as follows:

Fall Semester.—Withdrawal dated on or before October 31, cancellation of two-thirds of tuition charges; withdrawal dated on or before November 30, cancellation of one-third of tuition charges. No refund or reduction will be allowed on a withdrawal dated subsequent to November 30.

Spring Semester.—Withdrawal dated on or before February 28, cancellation of two-thirds of tuition charges; withdrawal dated on or before March 30, cancellation of one-third of tuition charges. No refund or reduction will be allowed on a withdrawal dated subsequent to March 30.

In no case will a refund be made of the first third of the total tuition charges unless the registration is in advance and the course is dropped before the regular registration day. In this case a withdrawal fee of $5 is charged and tuition fees refunded. In no case will tuition be reduced or refunded because of nonattendance upon classes.

Payment applies only to the semester for which a registration charge is incurred and in no case will this payment be credited to another semester.

Authorization to withdraw and certification for work done will not be given a student who has not a clear financial record.

Withdrawal from a course or from the University between October 31 and the end of the fall semester and between February 28 and the end of the spring semester is permitted only in exceptional cases.

The grade of *F* (to be counted as zero) will be given in a course dropped without the approval of the Dean.

All charges for courses dropped without the approval of the Dean must be met by the student. Reporting the dropping of a course to an instructor does not effect its discontinuance.

FELLOWSHIPS, SCHOLARSHIPS, PRIZES, LOAN FUNDS

Law School Research Assistantships.—A limited number of student research assistantships are available each year to students currently enrolled in the Law School, preference being given to applicants who are completing their second year. Each assistant receives an annual stipend. Awards are made on the basis of academic standing, financial need, and capacity for leadership. Research assistants have duties similar to those of teaching fellows. Applications should be submitted to the Dean of the Law School not later than May 1.

Law School Teaching Fellowships.—A limited number of teaching fellowships are available each year to prospective candidates for the Master of Laws degree. Each fellow receives an annual stipend, plus tuition

for the academic year. Teaching fellows follow an approved program of study and research, assist members of the Faculty in the guidance of first year students, and supervise student work in legal bibliography and the drafting of legal instruments. Upon satisfactory completion of the year's work, a fellow is recommended for the degree of Master of Laws. Applications should be submitted to the Dean of the Law School not later than March 1.

Charles Worthington Dorsey Memorial Scholarship.—This scholarship, established in 1947 as a memorial to Charles Worthington Dorsey, Bachelor of Laws, '81, Master of Laws, '82, is awarded upon the recommendation of the Faculty of the Law School to a needy and promising graduate of Columbian College or other division of the University, with a Bachelor of Arts or other equivalent degree, who has maintained an average of *B* as an undergraduate student and who desires to pursue the study of law as a full-time student. The scholarship covers tuition for the course leading to the first degree from the Law School, Bachelor of Laws or Juris Doctor, provided that the holder maintains an average of *B*. The right is reserved to suspend the benefits of the scholarship for cause at any time. The scholarship is awarded ordinarily once every three years.

Law School Scholarships.—Seven scholarships are available each year in the Law School to graduates of accredited colleges. Each scholarship provides full three-year tuition in the morning division of the Law School. Candidates must have graduated in the upper fifth of their class and must have demonstrated qualities of leadership in addition to scholastic attainment. To retain the scholarship, the successful candidate must maintain a *B* average. Application must be made before March 1 to the Dean of the Law School.

Ellsworth Prize.—The Ellsworth Prize of $25, established by the late Mr. Fritz von Briesen, is awarded to the student doing the best work in the subject of Patent Law Practice.

John Bell Larner Prize.—This prize, established by the bequest of John Bell Larner, consists of a medal which is awarded annually to that member of the graduating class in the Law School who attains the highest average grade in the entire course for the degrees of Bachelor of Laws or Juris Doctor.

John Ordronaux Prizes.—These prizes were established in 1909 by the bequest of John Ordronaux.

The amount of $75 is awarded annually to the student in the Law School who has attained the highest average grade in the first year, full-time course; and $75 to the student who has attained the highest average grade in the second year, full-time course.

Through the generosity of friends of the University a number of loan funds are available to students in the Law School. Among them is the Henry Strong William A. Maury Loan Fund established by the Henry Strong Educational Foundation in memory of Henry Strong and William A. Maury. Application for loans should be made to the Treasurer of the University.

REGULATIONS

Students in the Law School are subject to, and are expected to familiarize themselves with, the general University regulations stated in the University Catalogue.

Amount of Work

Students without substantial outside employment may take a program of studies of fourteen hours a week in which the majority of hours must be in the morning sections. Students, whether in the morning or evening division, with substantial outside employment must take a limited program of studies not exceeding ten hours a week. Students taking a majority of their classes in the evening may not take more than ten hours a week. A minimum schedule of ten hours in the morning division and six hours in the evening division is required except in exceptional circumstances when authorized by the Dean.

Attendance

Regular attendance at classes is required and is necessary for successful work. A student who is deficient in class attendance in any course may, by action of the Faculty, be barred from taking the examination.

Attendance at classes is limited to students registered to take them for credit. "Auditing" classes is not permitted.

Residence Requirements

Candidates for the degree of Bachelor of Laws must complete a residence period of three academic years. Attendance in the morning division for the fall and spring semesters constitutes residence for an academic year; similar attendance in the evening division constitutes residence for three fourths of an academic year. Consequently, a morning student must attend six semesters to meet residence requirements, an evening student must attend eight. Students authorized to take schedules of less than ten hours in the morning division or less than six hours in the evening division, receive residence credit on a proportional basis. Students who attend the summer sessions receive fractional residence credit.

Students planning to attend summer school sessions at other law

schools and desiring to use credits obtained at such schools in their course at this Law School must first have the courses they wish to take approved by the Dean. In no event will credits be recognized in excess of those which might be obtained in a similar period in this School.

Graduation Requirements

Application for Graduation.—Application for a degree should be filed in the Office of the Registrar at the time of registration for the last term of the senior or final year.

Presence at Graduation.—A candidate is required to be present at the graduation exercises unless written application for graduation in absentia is approved by the Dean.

Examinations

Written examinations are held at the end of each course. Every student is required to take the regular examinations unless excused. No excuse for absence will be granted except by the Dean and then only for illness or other emergency. Application for excuse must be made in writing not later than one month after the date of the examination. A grade of *NG* (no grade) will be entered on the record of a student thus excused, and he may take the next regularly scheduled examination in the course for which the excuse has been granted.

No special examinations will be given; except that, upon written application to the Dean, showing sufficient cause, a candidate for a degree at a convocation before the next regular examination, if he would be entitled to take a postponed examination, may, at the discretion of the Faculty, be given a special examination.

If a student fails to take an examination, a grade of *F* (to be counted as zero) will be recorded unless he has been excused from the examination as provided above or has obtained the Dean's permission to drop the course.

Grades

Grades are indicated by the letters *A*, excellent, 85–100; *B*, good, 75–84; *C*, satisfactory, 65–74; *D*, poor, 55–64—below standard for graduation; *F*, failed—below 55; and *NG*, no grade—student excused from failure to take regularly scheduled examination. See "Examinations" above, for grade upon failure to take an examination. The grades *A*, *B*, *C*, and *D* mean that the work has been completed and credit given for the courses. *F*, failed, means that no credit will be given. To obtain credit the student must repeat the course, except that a student who has obtained an average of *C* in the work of the semester just completed and

the preceding semester and received a grade of *F* in only one course during those semesters may take the next regular examination in that course if he has not been excluded previously for low scholarship. The privilege is limited to taking the next regular examination, except that a candidate for a degree at a convocation before the next regular examination may be permitted to take a special examination at the end of the next semester. If on the reexamination the student receives a passing grade he will be given credit in the course. Both grades are recorded.

Exclusion and Probation for Poor Scholarship

Candidates for the Degrees of Bachelor of Laws and Juris Doctor.—A student who in one semester, or two successive semesters, fails in courses aggregating eight or more semester hours will be excluded, except that if currently registered he will be permitted to complete the work of the semester. Such a student is not eligible thereafter to be registered in the Law School or to attend classes. While excluded he may, however, with the consent of the Faculty, be admitted to the regular examinations in those courses in which he has made a grade below passing, and if he receives a grade of passing in those courses with an average sufficient to make his cumulative average not less than *C*, he will be reinstated.

A student not subject to exclusion under the foregoing rule who at any time fails to maintain a cumulative average of at least *C* will be placed on probation. A student on probation may at the discretion of the Dean be required to reduce his program of study. If a student on probation does not, by the end of the second semester following that in which his average has fallen below *C*, receive grades sufficient to give him a cumulative average of at least *C*, he will be excluded.

The cumulative average of a student includes all the grades in all the courses taken while he is in the Law School as a candidate for a particular degree. When a course is repeated or a reexamination is taken, both the first grade and the subsequent grade or grades are counted in the cumulative average.

In special cases in which a student who has been excluded can clearly demonstrate that his low grades were due to special circumstances beyond his control and that he has the capacity to pursue the study of law with a definite likelihood of success, such student may be readmitted by the Faculty subject to such conditions as the Faculty may impose.

Candidates for Graduate Degrees.—A candidate for one of the graduate degrees whose work is not satisfactory in the opinion of the Faculty, taking into consideration the requirements and standards for the degree, may, by action of the Faculty, be excluded at the end of the semester for which he is currently registered.

Unclassified Students.—An unclassified student whose work is not satisfactory in the opinion of the Faculty may, by action of the Faculty, be excluded at the end of the semester for which he is currently registered.

Classification of Students

Students are divided into classes on the completion of semester hours as follows: first year, one through twenty-eight; second year, twenty-nine through fifty-six; third year, fifty-seven or more.

Right to Change Rules

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

Right to Dismiss Students

The right is reserved by the University to dismiss or exclude any student from the University or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable to do so.

STUDENT LIFE

Living Accommodations

Women Students.—The Hattie M. Strong Residence Hall provides single rooms at $35 a month and double rooms at $30 a month a person. Meals are served at the Student Union. Admission to the University does not include dormitory reservation. Applications for rooms should be made well in advance. Forms for application, together with detailed information, may be obtained from the Director of Activities for Women.

Girls under the age of twenty-one who are enrolled for six or more semester hours of academic work in the University and who are not living with their parents or relatives may live outside the dormitory only with the permission and approval of the Director of Activities for Women, upon receipt of written requests from parents. In no case will permission be granted for such girls to be domiciled outside the dormitory, except with persons approved by the Director of Activities for Women.

Men Students.—Welling Hall provides double room facilities for 102 students. Rooms rent for $24 a month a person. Dining facilities are available to all residents. Meals are also served at the Student Union. Application forms for room reservation may be obtained from the Director of Activities for Men, Building R, 2027 H Street NW.

Information concerning private rooming and boarding facilities near the University, for women students twenty-one years of age or older and for men students, may be obtained at the Housing Office. The reservation of rooms in private houses must be made by students.

Placement Office

The University Placement Office, 2114 G Street NW., provides assistance to students seeking full- and part-time employment. This office maintains a registry of positions locally and nationally available and refers qualified applicants for consideration. Information is also available on Civil Service examinations.

Health Administration

The University maintains a health service that is primarily diagnostic in its intent. For medical emergencies and health consultations there is, on the Campus, a Student Health Clinic open from 9:00 A.M. to 5:00 P.M., with physician and nurse in attendance. There is also a rest room for women, with a graduate nurse in charge.

Medical privileges include: (1) the physical examination of every student entering from secondary school; (2) three visits by the University physician or surgeon, office or residence (District of Columbia), in any one illness, exclusive of a specialist, surgical operation, laboratory, or X-ray examination; (3) hospitalization, including board and nursing in the University Hospital for not more than one week during any twelve month period—the necessity to be determined by the Director of Health Administration. The duration of hospitalization period (maximum, one week) is also to be determined by the Director of Health Administration.

This medical benefit does not apply to illness or disability incurred previous to the University semester or prior to payment of tuition fees.

The student is allowed, if he so desires, to engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

Rules: (1) The Director of Health Administration is empowered to limit or deny the medical benefits where, in his discretion, a student has, by his misconduct or breach of the rules of the University, made himself ineligible; (2) the Director of Health Administration has authority to determine the necessity and length of hospitalization; (3) a student who has severed his connection with the University is ineligible for medical benefits; (4) a student intending to train for an athletic team is required to pass a thorough examination at the beginning of each semester; (5) the above regulations apply also during the summer sessions of the University.

The University is not responsible for injuries received in inter-collegiate or intra-mural games, or in any of the activities of the departments of physical education.

PLACEMENT SERVICE FOR GRADUATES

The Law School takes a continuing interest in the placement of its graduates and maintains a placement service for that purpose. The Dean, the Faculty, and the University Placement Office cooperate in collecting information from alumni of the Law School, law firms, and government agencies concerning opportunities for legal positions throughout the country. Students and recent graduates are invited to discuss their placement problems with the Assistant Dean in charge of placement.

THE DEGREES OF BACHELOR OF LAWS AND JURIS DOCTOR

The programs of study leading to the degrees of Bachelor of Laws and Juris Doctor are addressed to the development and application of legal principles, skills, and ideals which are indispensable to the equipment of a lawyer for professional responsibility and leadership in modern society. They include, first and foremost, the traditional core of legal education, namely, the study of legal materials—judicial, statutory and administrative—and instruction in the technique of their use. These programs include the study of the nature and purpose of law, the history of the Anglo-American legal system, and the history and standards of the legal profession; practice in the skills of legal research and legal writing, elementary training in trial practice; and, through the medium of seminars, experience in group handling of legal problems.

REQUIREMENTS FOR THE DEGREES

Bachelor of Laws

To be recommended for the degree of Bachelor of Laws (LL.B.) the student must have completed a residence period of not less than three academic years (four years for evening students) and eighty semester hours, with a cumulative average of at least *C*. A minimum of one full-time year of residence and twenty-eight semester hours is required of students admitted with advanced standing.

Juris Doctor

The degree of Juris Doctor (J.D.) is conferred as a recognition of the completion at the George Washington University Law School, with high

rank, of the required program of study for the Bachelor's degree, including experience in research and legal authorship. To be recommended for this degree the student must have completed: (1) a residence period of not less than three academic years (four years for evening students) in the Law School; (2) eighty semester hours with a cumulative average of at least *B* including one of the following courses: Comparative Law, Jurisprudence, or one of the graduate seminars; and (3) one year of acceptable service on the board of student editors of *The George Washington Law Review*, election to which is subject to regulations laid down by the Faculty.

Honors

The degree of Bachelor of Laws or of Juris Doctor "with distinction" will be awarded students who obtain a cumulative average of *A*.

Curriculum

Required and Elective Courses.—A program of required and elective courses has been developed in order to assure coverage of the basic courses as well as to allow a degree of flexibility to meet the diverse interests of students. All first-year courses, three second-year courses, and one third-year course are required, leaving a total of thirty-eight hours of electives. In general, second-year students are restricted to second-year electives but in appropriate cases the taking of third-year electives will be approved. Similarly, specially qualified third-year students may secure approval to take graduate courses and research in public law.

Practice and Trial Practice Court.—Classroom instruction is concerned in pleading and procedure, trial and appellate practice, and evidence. This instruction includes grounding in the principles of the Federal Rules of Civil Procedure and the Federal Rules of Criminal Procedure. In addition, each senior student is required to participate in the work of the Trial Practice Court, which includes the trying of cases as junior counsel and as senior counsel. A special section of the court is devoted exclusively to the trial of patent cases. Experience in preparing and arguing appellate court cases is available through the Case Club Competition.

Patent Law.—Students interested in patent law should take the following group of courses: Unfair Trade Practices, Substantive Patent Law, Patent Office Practice, Patent Trial Practice Court, Federal Anti-Trust Laws and Trade Regulation Seminar.

Curriculum.—Following is the curriculum for students beginning in the fall semester. Adjustments are made to meet the needs of students beginning in the spring semester and in the summer.

Morning Division

FIRST YEAR

FALL SEMESTER	Semester Hours
Legal Method and Legal System	4
Contracts I	4
Personal Property	2
Criminal Law and Procedure	4
Total	14

SPRING SEMESTER	Semester Hours
Real Property	2
Contracts II	2
Agency	4
Torts	4
Constitutional Law	2
Total	14

SECOND YEAR

FALL SEMESTER	Semester Hours
Civil Procedure	4
Electives	10
Total	14

SPRING SEMESTER	Semester Hours
Evidence	4
Conveyances	2
Electives	8
Total	14

THIRD YEAR

FALL SEMESTER	Semester Hours
Trial Practice Court	2
Electives	10
Total	12

SPRING SEMESTER	Semester Hours
Trial Practice Court	2
Electives	10
Total	12

Evening Division

FIRST YEAR

FALL SEMESTER	Semester Hours
Legal Method and Legal System	4
Contracts I	4
Personal Property	2
Total	10

SPRING SEMESTER	Semester Hours
Torts	4
Contracts II	2
Criminal Law and Procedure	4
Total	10

SECOND YEAR

FALL SEMESTER	Semester Hours
Real Property	2
Civil Procedure	4
Agency	2
Elective	2
Total	10

SPRING SEMESTER	Semester Hours
Constitutional Law	2
Conveyances	4
Electives	4
Total	10

THIRD YEAR

FALL SEMESTER	Semester Hours	SPRING SEMESTER	Semester Hours
Electives	10	Evidence	4
		Electives	6
Total	10	Total	10

FOURTH YEAR

FALL SEMESTER	Semester Hours	SPRING SEMESTER	Semester Hours
Trial Practice Court	2	Trial Practice Court	2
Electives	8	Electives	8
Total	10	Total	10

GRADUATE PROGRAM

Degrees of Master of Laws and Doctor of Juridical Science

The administration of justice under law is a matter so vast and complex that some graduates feel the need for further study in order to broaden and deepen their understanding of the law. Others wish to extend their study into rapidly developing specialized fields. Graduate instruction, leading to the degree of Master of Laws, is therefore offered to enable qualified students to attain one or both of these objectives.

The degree of Doctor of Juridical Science is offered for selected students whose aim is to extend still further their studies by pursuing original research in law.

Graduate work is available to evening as well as morning students in order that lawyers in private practice and in government service may engage in advanced study or in original research.

Programs of Study for Foreign Lawyers

Two programs of study are provided to meet the needs of lawyers who come from countries whose legal systems are not based on the English law. For such lawyers, whose aim is to acquire an understanding of our system so that they may work intelligently with its materials and practitioners after returning to their own countries, there is available the degree of Master of Comparative Law. For foreign lawyers, however, who wish to practice in a common law jurisdiction there is available the degree of Master of Comparative Law (American Practice) with an appropriate program of study. With respect to both programs, the students are not assigned to special classes but work in association with the other students in the regular courses, each student's program being adapted to his individual needs.

Non-Degree Study: Continuing Legal Education

As a result of changes and expansion in various fields of the law many lawyers pursue graduate study in order to keep abreast of current developments. Consequently, an important part of the graduate program is to provide for members of the bar not desirous of becoming degree candidates. The offerings in the field of governmental regulation provide opportunities for specialization. Although third-year and graduate courses are particularly suitable, first-year and second-year courses may be taken in appropriate cases. Members of the bar taking graduate work in this way register as unclassified students or as continuing legal education students.

Research in Public Law

Research in public law is conducted under the supervision of members of the Faculty. The purpose of this research is to furnish means for training specialists in public law, either as government lawyers or as lawyers representing individuals or corporations in cases in which the Government is a party, and to assist in the analysis, clarification, formulation, and improvement of public law, substantive and procedural.

Candidates for the graduate degrees in the Law School and specially qualified seniors may pursue this work.

REQUIREMENTS FOR THE DEGREES

Master of Laws

To be recommended for the degree of Master of Laws (LL.M.) the student must have completed a residence period of not less than two semesters. Such residence should normally be continuous. All requirements for the degree must be completed in this Law School and in a period not exceeding two years after registration for work for the degree. The student must have completed, with a minimum average of *B*, twenty semester hours in courses listed in the law curriculum as graduate courses except that in appropriate cases third-year courses may be approved for inclusion in the program of study if not previously taken.

Master of Comparative Law

The degree of Master of Comparative Law (M.Comp.L.) is for foreign students who intend to return to their countries. To be recommended for this degree the student must have completed a residence period of not less than one academic year. He must have completed satisfactorily twenty-four semester hours in approved courses in the curriculum of the Law School or of such other departments of the University as the Faculty of the Law School shall approve.

Master of Comparative Law (American Practice)

The degree of Master of Comparative Law, American Practice (M. Comp.L.(Am.Prac.)) is for foreign students who intend to remain in this country. To be recommended for this degree the student must have completed a residence period of not less than one academic year. He must have completed twenty-eight semester hours in approved courses in the curriculum of the Law School with a cumulative average of at least *C*.

Doctor of Juridical Science

To be recommended for the degree of Doctor of Juridical Science (S.J.D.) the student must have completed a residence period of not less than one academic year. He must have pursued a course of study and research designated by his consultative committee and approved by the Committee on Graduate Studies. At the conclusion of his first year of residence, or at such other time as the Committee on Graduate Studies may set, the candidate must pass an oral examination in those fields of study selected by the consultative committee. This examination shall be conducted by the consultative committee and such other members of the Faculty and qualified experts from other research institutions as may be selected by the Committee on Graduate Studies.

Not later than the date specified in the University calendar the candidate must submit to the Dean one typewritten original and two legible and complete carbon copies of his dissertation in its final form. The dissertation must contain a summary of from 2,500 to 3,000 words in length inserted as an appendix. An additional original typewritten copy of this summary must be submitted for publication. To be acceptable the dissertation must, in the opinion of the examining committee, constitute a substantial contribution to the field of law concerned and be suitable for publication. Additional information will be supplied by the Chairman of the Committee on Graduate Studies.

The summaries of accepted dissertations will be printed in a volume forming a number of the University Bulletin. The successful candidate for the doctorate is required, before receiving his degree, to pay a fee to cover the expense of printing the summary of his dissertation.

COURSES OF INSTRUCTION

COURSES OF INSTRUCTION

The courses of instruction listed below are subject to change. The University reserves the right to withdraw any course announced.

First-year courses are numbered from 101 to 200; second-year courses, from 201 to 300; third year courses, from 301 to 400; and graduate courses, from 401 to 500.

The number of hours of credit given for the satisfactory completion of a course is indicated in parenthesis after the name of the course. Thus, a year course giving two hours of credit each term is marked (2–2), and a term course giving two hours of credit is marked (2).

Morning classes begin at 9:10 A.M. Evening classes begin at 5:50 P.M.

First Year

100 *Agency* (2) — Cooper

Fall—evening, spring—morning.

Master and servant (status of agent), respondeat superior, nature of agency relation, actual authority, parties (disclosed and undisclosed principal), unauthorized transactions, notice, notification.

110 *Constitutional Law* (4) — Collier, Mallison

Spring—morning and evening.

Historical introduction, judicial approach and methods, doctrine of the separation of powers, powers of the National Government, the federal system, and relation of federal and state courts.

115–16 *Contracts I, II* (4–2) — Mayo, Garrett

Academic year—morning and evening, summer 1956.

Scope of [illegible] intended contracts, [illegible] the performance of contracts, other steps [illegible] damages, restitution. Mutual assent, offer and acceptance, misunderstanding, mistake, reformation, parol evidence rule. Consideration, third party beneficiaries, assignments, conditions. Statute of Frauds.

125 *Criminal Law and Procedure* (4) — Murdock, Cooper

Fall—morning, spring—evening, summer 1956.

Origin and purposes of criminal law, elements of criminal liability, general principles, [illegible] attempts, and conspiracy), crimes against the person, against property, and against [illegible] statutory offenses, criminal procedure, with consideration of Federal Rules of Criminal Procedure.

135 *Legal Method and Legal System* (4) — Fryer, Benson, Burke

Fall—morning and evening; spring—morning and evening; summer 1956.

Introduction to substantive and procedural law dealing with basic concepts; training in method and technique of case law and legislation using modern case records; practice in use of law books and in legal writing; importance of language in law; legal reasoning and use of precedents under doctrines of stare decisis, law of the case, and res judicata; development of Anglo-American legal system, examination of judiciary and bar, stressing enforcement of ethical standards.

145 *Personal Property* (2) — Fryer, Mallison, Garrett

Fall—morning and evening; spring—morning and evening.

Concepts of property, including interests created by bailments, liens, and pledges, methods of acquiring ownership.

150 *Real Property* (2) — Benson

Fall—evening; spring—morning; summer 1956.

Historical background of the law of estates and conveyances, possessory estates, concurrent estates.

160 *Torts* (4) — Merrifield, Garrett

Spring—morning and evening.

Liability for harm to persons or tangible things: defamation and invasion of privacy.

Second Year

200 *Administrative Law* (4) — Davison

Spring—morning and evening; summer 1956.

The problem of the administrative process in the separation of powers, including the status of administrative personnel, administrative discretion, and judicial scrutiny of administrative action, delegation, rule-making—particularly as relating to federal administrative agencies.

205 *Brief Writing and Oral Argument* (2) — Burke

Fall—evening.

Exposition and study of the basic techniques of written and oral legal argumentation. Each student will be required to write, as a term paper, a brief presenting contentions based on the actual record in an unargued case.

210 *Business Associations* (4) Weaver

Spring—morning and evening.

Contrast of the partnership and corporation as alternative forms of organization; organizing partnerships and corporations—formalities, capital contributions, share structure, problems of operation; relations between partners; roles of shareholders, directors, officers; control devices; distributions to owners, voluntary reorganization; dissolution and termination.

215 *Civil Procedure* (4) Burke

Fall—morning and evening; summer 1956.

Pleadings, discovery, joinder, forms of trial and related proof problems. Emphasis is on Federal Rules of Civil Procedure and other modern codes.

219 *Commercial Paper* (4) Orenthicher

Fall—morning and evening; summer 1956

Bills of exchange, promissory notes and checks, especially under the Negotiable Instruments Law.

224 *Commercial Transactions* (4) Orenthicher

Spring—morning and evening

The law relating to the sale and distribution of goods and to the security transaction devices utilized in this connection, with particular attention to the effect of uniform laws.

230 *Conveyances* (2) ———

Spring—evening

Land contracts, conveyances, recording, easements, profits, covenants, and equitable servitudes, adverse possession and adverse user.

235 *Domestic Relations* (2) Mallison

Fall—morning and evening, summer 1956.

Marriage, annulment, and divorce; adoption and custody of children; contract relations.

240 *Evidence* (4) Fryer

Spring—morning and evening, summer 1956

Functions of court and jury, qualification and examination of witnesses, relevancy and materiality, evidence, proof of writings, application of the hearsay rule.

243 *Federal Jurisdiction* (2) Cooper

Fall—morning and evening.

Constitutional and statutory origins of federal courts, cases arising under the laws and the Constitution, diversity of citizenship, jurisdictional amount, removal procedure and jurisdiction, limitations on federal jurisdiction, state and federal conflicts, substantive law applied by federal courts.

248 *Future Interests* (2) Benson

Spring—morning and evening, summer 1956.

Future interests at common law and under modern statutes, construction of limitations, powers of appointment, rule against perpetuities.

251 *Insurance* (2) Driscoll

Fall—evening.

The insurance device in life, property, and other risks.

254 *International Law* (4) Murdock

Spring—morning and evening.

The basic course. General survey of rights and duties of states, law of war and peace, including nationality law, international claims, pacific settlement of disputes, treaties, United Nations and World Court, study of source materials of International Law.

259 *Labor Law* (4) Mansfield

Fall—morning and evening.

Law governing labor-management relations, organization and association of employees, regulation of economic weapons, enforcement of collective bargaining agreements, inter-union and intra-union relations.

265 *Legal Accounting* (2) Fey

Fall—morning and evening, summer 1956.

A study of elementary accounting principles and techniques, application of accounting principles to legal problems.

270 *Legislation* (2) Mallison

Spring—evening, summer 1956.

The legislative process, with particular emphasis on its operation in federal and state governments, legislative organization and procedure, statutory interpretation.

274 *Taxation—Federal Estate and Gift* (2) Driscoll

Spring—morning and evening.

Specific problems in federal estate and gift taxation, with consideration of relevant state inheritance tax problems.

279 *Taxation—Federal Income* (4) Fey, Driscoll

Fall—evening, spring—morning.

A study of the federal income tax including construction of statutes, practice and procedure, and legislative policy.

285 *Trusts and Estates* (4) Weaver

Fall—morning and evening, summer 1956.

Principles of execution of wills; problems of construction, revocation, ademption, lapsed and testamentary gifts; intestate succession. Creation of trusts, inter vivos and testamentary, administration of decedents' estates and trust estates.

295 *Unfair Trade Practices* (4) Weston

Fall—morning and evening.

Unfair trade practices at common law and under statutes, trademarks, trade names, copyright law, misappropriation of ideas, protection of commercial and consumers against false advertising under Federal Trade Commission Act; resale price maintenance under state Fair Trade Acts, miscellaneous business practices.

Third Year

300 *Admiralty* (2) Davis

Spring—evening.

Federal and state jurisdiction, jurisdiction over waters, craft, contracts, torts, crimes, in equitable matters, etc.; laws applicable to maritime workers and maritime liens.

303 *Aviation Law* (2) ———

Fall—evening.

Procedure before Civil Aeronautics Board, legal problems arising in connection with air transportation and airports, international conventions and organizations.

307 *Comparative Law* (4) Murdock

Fall—evening.

The Civil Law System, general introduction to foreign law as exemplified by Roman Law and the modern French Law; comparative

study of administration of justice, legal institutions, and methods for international law practice and working with foreign lawyers.

Collier

309 *Conflict of Laws* (4)

Fall—morning and evening; summer 1956

Study of cases involving foreign elements; principles of jurisdiction and limitations upon its exercise; procedure; torts, workmen's compensation, contracts, property, family law, administration of estates, business associations.

Collier

313–14 *Constitutional Interpretations* (2–2)

Academic year—evening.

Advanced course in constitutional law. The Constitution and constitutional traditions; doctrines of limited government, separation of powers, implied limitations on legislative power, and significance of "due process" in current constitutional developments. Introduction to comparative constitutional law, with studies in the constitutional law of selected states of the Union.

318 *Creditors' Rights* (4)

Summer 1956

Remedies of unsecured creditors; judgments, fraudulent conveyances, creditors' agreements, equity and statutory receiverships, and bankruptcy. The general approach is that of law administration.

Weston

321–22 *Current Decisions* (2–2)

Academic year—morning and evening.

Required of, and limited to, members of the student staff of the *Law Review*.

Weston

330 *Federal Anti-Trust Laws* (4)

Spring—evening.

Restraints of trade at common law and under Sherman Anti-Trust Act of 1890; Federal Trade Commission and Clayton Acts by amendment; monopolies, price-fixing agreements, trade associations, exclusive dealing agreements, trade rules, and trade boycotts; patents and copyrights under antitrust laws.

Collier

335 *Jurisprudence* (4)

Not offered 1956–57

History of jurisprudence, schools of jurisprudence, particularly the current, existing schools; sociological jurisprudence, theories of justice, the nature of law, law and morals, law and the state, the sources of law, subject matter of law, sources and forms of law; the traditional element, analysis of general legal concepts.

339 *Labor Arbitration* (2) Merrifield

1957–58 and alternate years.

Labor arbitration and collective bargaining; role of the lawyer in negotiation and administration of collective labor agreements; practices, procedures, and substantive issues in labor arbitration.

341 *Labor Standards and Social Security Legislation* (2) Merrifield

Fall—evening.

Legal problems arising under federal and state statutes dealing with labor standards and social security. Particular emphasis is placed upon the regulation of wages and hours, workmen's compensation, and insurance against unemployment and old age.

345 *Legislative Drafting* (2) Zinn

Fall—evening.

Advanced instruction and practice in legislative drafting.

349 *Local Government Law* (2) Mallison

Fall—evening.

Types and objectives of city, county, and local governmental units; intergovernmental relations; original organization and changes; local lawmaking; community planning and development.

355 *Mortgages* (2) Orentlicher

1957–58 and alternate years.

Security interests in real property, their creation, transfer, enforcement, and extinguishment.

359 *Patent Law I** (2) ———

Fall—evening.

Origin and nature of patents, trade-marks and copyrights, patentability, anticipation and correction of patents; conditions precedent to issue of patents.

360 *Patent Law II* (2)

Spring—evening. Harris

Licensing and protection of patents; government ownership; protection of patent rights abroad; economic and social functions of patents.

*Those law students should take Law 359 and Law 360 consecutively in the fall semester and Law 361 and [illegible] in the spring semester. Law 361-62 may be taken by students who are taking or have taken Law 359.

362 *Patent Office Practice** (2) Rose

Spring—evening.

Rules and practice; appeal and interference procedure.

365–66 *Patent Trial Practice Court** (2–2) Geniesse

Academic year—evening.

Practice before the United States Court of Customs and Patent Appeals and the federal courts.

This course may be elected instead of Law 385–86 to satisfy the Trial Practice Court requirement.

370 *Public Utilities* (2) Fryer

1957–58 and alternate years.

Regulation by federal, state, and municipal authorities concerned with licensing, rates, services, and practices, with emphasis on federal regulation of interstate operations, judicial review.

376 *Restitution* (2) Burke, Orentlicher

Spring—morning and evening.

Remedies at law and in equity for restitution of benefits conferred, especially as based on the concept of unjust enrichment.

Orentlicher

380 *Suretyship* (2)

Not offered 1956–57.

The law of suretyship, especially in the context of accommodation, credit and commercial and financial practices, with attention given to [illegible] and non-commercial suretyship relations and the place of suretyship principles in the solution of legal problems generally.

385–86 *Trial Practice Court* (2–2) Morris, Kirkland, Edgerton, Myers, Jackson, Herrick, Monk, Kendrick, Skinker

Academic year—morning and evening.

Trial of assigned cases, trial tactics and techniques; pre-trial and court room proceedings pursuant to Federal Rules.

To be taken in the senior year. Prerequisite: Law 215 and 240.

391 *World Law* (2)

Not offered 1956–57.

International organization; the legal aspects of the United Nations.

Graduate Courses

401 *Administrative Law Seminar* (2) Davison

Spring—evening.

Group study of specific problems in administrative law.

*See footnote page 43.

424 *Comparative Law Seminar* (2) Murdock

Not offered 1956–57.

Group study of contemporary problems in comparative law.

428 *Constitutional Law Seminar* (2) Collier

Not offered 1956–57.

Group study of contemporary problems in constitutional law.

412 *Control and Use of Atomic Energy* (2) Mayo

Spring—evening.

Various legal problems involved in the control and use of atomic energy will be considered, including the Atomic Energy Act, the policy underlying the present government monopoly, the security problem of safeguarding atomic military information, the implications in peacetime industrial control and use, and legal means of protecting personal interests against the possible consequences of atomic warfare.

416 *Criminal Practice and Administration* (2) Cooper

Spring—as arranged.

Group study of the fundamental aspects of criminal procedure with special reference to practice before the District of Columbia and federal courts; the law of arrest, searches and seizures, self-incrimination, the conduct of the preliminary examination and grand jury, sufficiency of indictments, trial procedure, and the order of pleas and motions.

420 *Estate Planning Seminar* (2) Weaver

Spring—evening.

Group study of the effective disposition of wealth, inter vivos and testamentary gifts, preservation for owner's future use, use of insurance, tax and administrative problems, business interests, pension and profit-sharing arrangements.

424 *Evidence and Trials Seminar* (2) Fryer

Spring—evening.

Study of selected problems involving presentation of documentary proof and expert testimony in connection with the reforms sought by the Uniform Rules of Evidence and recent developments in the field of forensic medicine.

428 *Food and Drug Law* (2) Goodrich, Kleinfeld

Spring—evening.

A lecture and discussion course dealing with the Federal Food, Drug, and Cosmetic Act and governmental controls thereunder. Both government and industry viewpoints are considered.

431 *Government Contracts I* (2) McIntire

Fall—evening.

A consideration of the basic power of the Federal Government to enter into contracts; the nature and construction of such contracts; normal and war or defense powers aspects of government procurement, including administrative and legislative policy and procedures; forms of contracts; standard clauses; advertised bid procedure problems; negotiated contracts; modification of contracts; remedies on contractual claims.

432 *Government Contracts II* (2) McIntire

Spring—evening.

Special problems in government contracts, including adjustments and relief; procedure for prosecuting claims under government contracts; attempts at price, cost, or profit control; termination.

437 *International Law Seminar* (2) Murdock

Spring—evening.

Group study of contemporary problems in international law.

442 *Labor Law Seminar* (2) Merrifield

Spring—evening.

Group study of contemporary problems in labor law.

446 *Law of Money and Monetary Obligations* (2) Dach

Not offered 1956–57.

Introductory survey of the provisions of public law by which money is administered, relating particularly to the Federal Reserve System; the legal character of money and of monetary obligations; legal tender; the "dollar-for-dollar" rule and its limitations; protective clauses (gold, commodity, and index clauses). Particular emphasis will be given to the law relating to foreign money.

449 *Law of the Near East* (2) Liebesny

Not offered 1956–57.

A study of the law of the Arab countries, including the basic principles of the Islamic law, an analysis of the present day codes, and an investigation of the Western influences on the laws of the Arab countries.

455 *Legal Problems in Modern Methods of Warfare* (2) Mallison

Fall—evening.

The contemporary international law of war, legal aspects of modern methods of warfare (economic, political, psychological, and military); regulation of hostilities; the special problems of atomic, bacteriological, and chemical weapons; war crimes.

459 *Military Law and Jurisdiction* (2)

Not offered 1956–57.

Sources of military jurisdiction; military law proper, including court martial jurisdiction and procedures before, during, and after trial; military government; martial law; laws of war and treatment of offenders.

463 *Regulation of Communication Media* (2) Mayo

Fall—evening.

An examination of the legal doctrine relating to regulatory practices in the channels of mass communications, i.e., newspapers, motion pictures, and radio-television; analysis of the operational structure of the mass media and the pattern of control exercised by government, private associations, and various community groups; appraisal of the comparative utility of various regulatory techniques for implementing policies affecting these media; special emphasis will be placed on the functions of the Federal Communications Commission.

466 *Regulation of Securities and Securities Markets* (2) Kroll

Spring—evening.

A study of state and federal laws governing the offering and distribution of securities to the public by corporate issuers and others, the regulation of securities markets, and the rights and liabilities of parties under such statutes. Particular emphasis will be given to statutes administered by the Securities and Exchange Commission.

468 *Research in Patent, Trade-Mark, and Copyright Law* (2) Harris

Fall—as arranged, spring—as arranged.

Registration is limited to students who have taken Substantive Patent Law and related courses including, as a rule, Trade Regulation Seminar, and who have at least a *B* average. A request in writing, with a tentative outline of the topic of research, must be submitted to the Dean at least one month prior to registration day. Registration is permitted for one semester only and the work must be completed within the semester.

471 *Research in Public Law* (2) The Staff

Fall—as arranged, spring—as arranged.

Registration is limited to students who have previously had a seminar in constitutional history or constitutional law and who have at least a *B* average. A request in writing, with a tentative outline of the topic of research, must be submitted to the Dean at least one month prior to registration day. Registration is permitted for one semester only and the work must be completed within the semester.

475 *Taxation—Corporate* (2) Driscoll

Fall—evening.

Case law and 1954 Internal Revenue Code provisions applicable to corporations; analysis of corporate distributions, redemptions of stock, reorganizations and mergers; collapsible corporations, corporate liquidations, sales of business enterprises; personal holding companies, accumulated earnings tax, and carry-overs.

478 *Taxation of Foreign Income Seminar* (2) Driscoll

Not offered 1956–57.

Group study of methods of taxing income received from abroad and taxation of non-resident aliens; analysis of principal income taxation and estate taxation treaties; consideration of legislative proposals for taxation of foreign income.

480 *Taxation—Oil and Gas* (2) Driscoll

Spring—evening.

A study of the case law relating to percentage depletion, sales and transfers of interests in oil and gas properties, joint ventures, accounting methods in oil and gas operations, application of [illegible] and representation provisions of the 1954 Internal Revenue Code to oil and gas activities.

485 *Taxation Seminar* (2) Driscoll

Spring—evening.

Group study of special problems and recent developments in federal taxation.

492 *Trade Regulation Seminar* (2) Weston

Spring—evening.

Group study of current problems, relating to unfair trade practices and federal anti-trust laws.

495 *Urban Redevelopment* (2) Orentlicher

Fall—evening.

Selected problems in urban redevelopment and housing, with particular emphasis on programs under current federal and state legislation.

DEGREES CONFERRED

Bachelor of Laws

June 8, 1955

Edward Gray Ansell — Wis
B.S., U.S.N.A., 1948, University of Wisconsin

William Garnett Archibald, Jr. — Pa
B.S., 1950, Bucknell University

George Marshall Bayes — Tenn
B.S., 1949, United States Naval Academy

Harold Russell Beck — Ohio
B.S., U.S.A.F.C., 1951, Case Institute of Technology

Carter Bledsoe — Md.
A.B., 1948, Haverford College

Robert Lawton Bowling, Jr. — Va.
B.S., in E.E., 1949, B.S., in I.E., 1949, Virginia Polytechnic Institute

John Bowman Brassell — D.C.
B.S., 1943, Southwestern University

Lester Thurlow Brown — Pa.
B.S., in Ed., 1948, Pennsylvania State Teachers College, Edinboro

Charles Wesley Burton, Jr. — D.C.
A.M., 1950, Duke University
B.S., Washington and Lee University

Robert Chrestensen — Ill.
B.S., in E.E., 1950, University of Illinois

Irving Cohen — Va.
A.B., 1950, The George Washington University

Robert Wesley Cook — D.C.
A.B., 1949, The George Washington University

Robert Donaldson — N.C.
A.B., 1950, The George Washington University

Thomas Ivy Emerson — Pa.
B.S., 1948, M.S., 1951, Pennsylvania State University

Hugh Howard Evans, Jr. — Va.
B.S., 1950, University of Illinois

Arthur Ferguson — D.C.
A.B., 1950, Hampden-Sydney College

William Fisher — Va.
A.B., 1948, University of Texas

John Francis Fitzpatrick, Jr. — Pa.
A.B., 1950, Holy Cross College

Arthur Fried — Va.
A.B., 1951, Pennsylvania Military Institute

Edward Gelb — Pa.
B.S., 1951, University of Pennsylvania

Alan Gilbert — Va.
A.B., 1950, Johns Hopkins University

Robert Gilliam — Ky.
A.B., 1950, Berea College

Richard Alan Freeman — D.C.
A.B., 1949, University of Chicago
A.B., in Govt., 1951, The George Washington University

Reuben Goodman — N.Y.
B.C.S., 1949, College of the City of New York
A.M., 1950, Columbia University

George Edward Goodson — Okla.
B.S., 1948, United States Naval Academy

J. Donald Grant, Jr. — Conn.
B.S., 1950, Yale University

William Joseph Gundlach, Jr. — Mass.
A.B., 1952, The George Washington University

Merton Goodell Hoover — Maine
A.B., 1949, Bowdoin College

George Orville Hyatt, Jr. — W.Va.
A.B., 1951, Fenway City College

Arnold Hyde — D.C.
A.B., 1949, University of Virginia

Andrew Harold Kelaw, Jr. — Md.
A.B., 1950, The George Washington University

Joseph Dagenais Kennedy — Md.
B.S., 1948, University of Notre Dame

Allen Marvin Lahasky — Va.
B.S., in C.E., D.A., in P.E., 1948, University of West Virginia

Cecil Jean Liberty — Va.
A.B., in Govt., 1951, The George Washington University

Richard Call Low — Conn.
A.B., 1951, Brigham Young University

Rufus Washington Mayhugh, Jr. — Md.
B.S., 1950, University of Cincinnati

Irene Shelton McLean — Ark.
Alternate Member — Md.

A.B., 1950, Vanderbilt University

Robert Elwyn Morgan — Md.
B.S., in Econ., 1950, The George Washington University

Lolis Anthony Mumford — Md.
B.S., 1948, Georgetown University

Isham Morris Parker — Md.
A.B., 1950, The George Washington University

Donald Pearmund — Calif.
B.S., 1948, University of California

Lee Milton Pickett — Va.
A.B., in Govt., 1950, The George Washington University

Rufus Weldon Pitcher — Va.
B.S., 1948, University of Maryland

Francis Lincoln Rattenborg — Md.
B.S., in M.E., 1950, University of Illinois

Frederick Monks Ritchie — Md.
B.M.E. 1949, The George Washington University

William Donald Roberson — Md.
B.S. 1951, The George Washington University

Arlee Ewing Rotohn — Pa.
A.B. 1952, Dickinson College

Jaco Maynard Rouse — Ohio
A.B. 1941, University of California at Los Angeles

Charles Andrew Schmutz — Utah
B.S. 1952, University of Utah

Ernest Maurice Shalowitz — D.C.
A.B. 1951, The George Washington University

Richard Abraham Silver — Mass.
A.B. 1943, Boston University

Norman Frederick Slenker — Ohio
A.B. 1951, Ohio Wesleyan University

Luther Price Speer — Ind.
B.S. in E.E. 1925, Purdue University

James Robert Stover — Md.
B.M.E. 1950, Catholic University of America

Kenneth Earl Stuart — Ind.
W.Va
Luke Edward Terry
B.S. 1938, University of Tennessee
M.S. 1949, West Virginia University — Va.

Robert Matthew Ujevic — Calif.
A.B. 1950, Duquesne University

John Walter Vaughn — Md
A.B. 1942, Maryland University

Peter Brockway Walker — Va.
A.B. 1952, Harvard University

Robert Daniel Wallick
(With distinction)
B.S. in E.E. 1948, B.S. in B.A. 1949, Lehigh University — Ill.

Nancy-Nellis Warner — D.C.
A.B. 1951, Catholic University of America

Irving Weisbrett — Ohio
A.B. 1952, The George Washington University

Ellwood Cecil Wells

October 15, 1955

J. Edgar Body — Pa.
A.B. 1939, University of Pittsburgh

William Godfrey Burke — Va.
A.B. 1952, The George Washington University

Stanley Norman Bostacky — Pa.
B.B.A. 1951, University of Pittsburgh

Victor Randolph Bowman — Md.
B.S. 1948, University of Wisconsin

Edward Ferris Bunnery III — D.C.
A.B. 1955, University of Maryland

Manuel de Echegaray — Spain
A.B. 1952, The George Washington University

Theodore Edward Dobbelaere — D.C.
A.B. 1952, The George Washington University

Albert Chester Fischer, Jr. — D.C.
B.S. 1950, Wilson Teachers College

Betty Mims Hudnall — Va
A.B. in Govt. 1952, The George Washington University

Charles Everett Jones — D.C.
A.B. 1951, Erskine College

Emma Frances King — N.Y.
A.B. 1951, The George Washington University

Vera Kornhauser — D.C.
A.B. in Govt. 1952, The George Washington University

Gerson Herman Kramer — Md.
A.B. 1951, Rutgers University

Lawrence Edwin Lindholm — Md.
B.E.E. 1952, The George Washington University

Joseph Roland Leclair — Md.
B.S. in M.E. 1948, University of Maine

William Bryant Lusk — Va.
A.B. 1949, University of Richmond

Jane Manuel — W.Va
David Monroe Marsh — Md.
A.B. 1951, Bowdoin College

John D. McCabe — N.Y.
A.B. 1947, The George Washington University

William Smith McCurry, Jr. — Md
B.S. 1948, University of South Carolina

Robert Eugene Meador — Mich
A.B. 1949, University of Michigan

Creighton Roland Meland — Md
B.S. in E.E. 1952, University of Minnesota

Paul Manfield Norris — Md
B.S. 1946, United State Military Academy

Otto Joseph Pregowski — N.Y
B.S. 1951, Cornell University

William Matthews Porter — Fla
A.B. 1950, University of Connecticut

John Fletcher Rolph III — Md.
Utah
Kenneth Bradford Romney
B.A. 1950, University of Utah — Md.
N.Y

John Powell Ryan — Md
James Speed
B.E.E. 1950, Cooper Union College

Frederick Debaldemott Thomas, Jr. — Va
B.A. 1951, Dartmouth College

Benjamin Wayland Young — Va.
B.S. in M.E. 1950, University of Alabama

February 22, 1956

Raymond Edward Aronson — Idaho
B.S. in A.E. 1948, B.S. in C.E. 1950, Utah State Agricultural College

Robert Roger Barnard
B.E.E. 1949, Cornell University

John Gardner Batchelder
B.S. 1948, University New Hampshire — Va.
Robert Gilmore Bond
A.B. 1948, Antioch College — Oreg.
Robert Franklin Bowman
B.S. in Econ. 1948, The George Washington University — D.C.
John Henry Chandler, Jr.
A.B. 1948, University of Cincinnati — Va.
Adam Clayton Craig, Jr.
B.S. in M.E. 1947, University of Kentucky — Va.
Alice Farnsworth Curtis
B.Ed. 1948, Ferris College — Ohio
Richard Watson Dameron
A.B. 1947, University of Washington — Wash.
A.M. 1948, Fletcher School of Law and Diplomacy
M.B.A. 1950, Harvard University
Lavinia Nottingham Dawes
A.B. 1948, Manhattan College — Va.
Benjamin Dewey
B.S. in E.E. 1948, University of Arizona — D.C.
John Freeman Dorrier, Jr.
A.B. 1950, Southwestern State College — Texas
Arthur Cecil Fleming
A.B. 1948, University of Virginia — Va.
Eugene Gilman Gardner
B.S. 1950, University of Wisconsin — D.C.
Paul Wesselhoeft Gilmore
A.B. 1948, The George Washington University — Va.
Harold Eugene Goldberg, Jr.
B.S. in B.A. 1951, University of Richmond — Va.
Francis Hammond Gordon
A.B. 1951, Denison University — Va.
George Gordon, Jr.
A.B. 1948, State University of Iowa — Pa.
James Addison Greenhow
A.B. 1951, Hampden-Sydney College — Va.
Joel Lawton Hackney
A.B. 1951, West Virginia University — W.Va.
William Read Hammond
A.B. 1954, The George Washington University — Va.
Frederick Louis Hamsher, Jr.
B.S. 1951, Tufts College — Mass.
Charles Edmund Hyde
A.B. 1950, Brigham Young University — Idaho
John Zeigler Kauffman
B.S. 1949, Northwestern University — Va.
Alan Kellogg
A.B. 1951, Rensselaer Polytechnic Institute — N.Y.
Robert Thomas Lewis
A.B. 1951, University of Virginia — D.C.
Arthur Dudley Lynch
B.S. in M.E. 1951, West Virginia University — W.Va.
Peter Guillermo Mackay
A.B. 1950, The Johns Hopkins University — Md.
Sheldon Burke McAnelly
B.S. 1949, Louisiana State University — Va.
Duncan Dwight McCrum
B.M.E. 1948, Georgia Institute of Technology — Va.
Julian Conrad Meier
B.S. in E.E. 1951, Clarkson College of Technology — Va.
John Pierson Moreland
A.B. 1950, University of Minnesota — Minn.
Gresham Kenyon Mossman
B.S. 1950, M.A. 1951, Massachusetts Institute of Technology — Md.
John Kenneth Muilenburg
M.E. 1950, Stevens Institute of Technology — D.C.
Frances Taylor Nassington
A.B. 1951, The George Washington University — D.C.
Richard Gaither Pinkham
B.S. in Ch.Eng. 1948, Northeastern University — Md.
MacA. Fulwiler Richardson III
A.B. 1951, Western State College of Colorado — Conn.
Thaddeus Arrington Ryner
B.C.E. 1948, Cornell University — Md.
William George Salter
B.S. 1951, University of Maryland — Md.
Sammy Hawes
A.B. 1950, Wilson College — Pa.
Robert Marion Sapp
A.B. 1949, Washington University — Va.
Hoang George Schweitzer
A.B. 1951, Fenn College — Va.
Langston Taylor Slater
B.S. 1950, Newberry University — Md.
Augusto Silva Smendek
A.B. 1949, Stetson University — Conn.
Richard Andrew Soden
B.S. 1951, Florida University — Md.
Abraham Fred Spindel
B.S. in E.E. 1951, University of Maryland — Md.
Werner Stenger
A.B. 1951, The George Washington University — Md.
Garland Pannill Thompson
William Bryant Tripany
B.S. in F.S. 1951, Georgetown University — S.D. Va.
Robert Augustus Tunis, Jr.
A.B. in Letters 1951, The George Washington University — Md.
Penny Washington
A.B. in Govt. 1951, The George Washington University — Va.
William Noel Wise
B.S. 1951, University of Maryland — Md.
Anthony Roman Zeminga
B.S. in M.E. 1950, Purdue University — Ill.

Bachelor of Laws in National University

June 8, 1955

Lawrence Thompson Bowman
B.S. in M.E. 1948, Va. State College — Mich.
Robert Wayne Bowser — Md.
Robert Eugene Connell — Mass.
Bernard George Green
[illegible] — Md.
James Vernon Harvell — Va.
Eugene Conley Pittenger — Ark.

Kenneth Edward Geier — Kans
A.B. 1951, University of Kansas

John Thomas Hollins — Va

Owen Hunter — Md.

Arnold Thomas Hooks — Ark.

Marvin Kaplan — D.C.

Clinton Luther — N.Y.

Daniel Maslan — Pa
(Honor Society)
B.S. 1950, University of Pittsburgh

Edwin James Smith — D.C.
B.S. 1952, Georgetown University

George Yandes Wheeler II — D.C.
A.B. 1953, Princeton University

Luke Edward White — Va.

October 15, 1955

Thomas Bowers IV — Va.

James Richard Campbell — Texas
B.S. in E.E. 1951, Ohio Northern University

Alice Cardine — D.C.

Paul Joseph Glenn — Ohio
A.B. 1948, College of St. Thomas
B.S.L. 1951, University of Minnesota

Edward Hume Hance IV — Oreg.
B.E. 1948, University of South California

Moses Tod Rapier — Va.
B.S. in Ch.E., 1948, Case Institute of Technology

John Francis Smith — D.C.

February 22, 1956

Luther Hewett Bowley — Pa
E.E. 1949, Lehigh University
M.S. 1951, Ph.D. 1956, Columbia University

Paul Albert Nichols — Md
B.S. 1948, West Virginia University

Thomas Emory Quattlebaum Jr. — D.C.

Mattie Alley Craven — D.C.

John Nelson Thomson — D.C.
B.S. 1948, United States Merchant Marine Academy

Margaret Amelia Deeds — Conn.

Jerry Joseph Powers — D.C.
B.S. in F.S. 1952, Georgetown University
A.B. 1949, Beloit College

Daniel Lee Hardaway — D.C.

Juris Doctor

June 8, 1955

Edgar Thurman Bellinger — Md.
A.B. 1951, Maryland College

Robert Austin Bixler — Ill.
B.S. 1954, United States Naval Academy

Russell Edwin Carlson — Pa.
A.B. 1949, University of Michigan

Matthew Adam Clary, Jr. — Texas
B.S. 1951, University of Maryland

Flynn Rudolph Eagle, Jr. — Mass.
B.S. in C.E. 1948, University of Michigan

Lucas Wesley Crawford — Idaho
B.S. 1950, Utah State Agricultural College

Frederick Arthur Fuchs — Calif.
B.S. 1948, University of Minnesota

Thomas Russell Pitten, Jr. — Va.
B.S.F.S. 1947, Georgetown University

Mary Florence Anderson — D.C.
A.B. 1949, Bethany College

Mary Louise Goldberg — D.C.
B.S. in E.S. 1951, Boston University

Charles Pinckney Hanley — N.D.
(Work Supervisor)
B.S. 1949, United States Naval Academy

Donald Lloyd Holland — Va.
A.B. 1948, University of Virginia

William Daniel Huddle — Md.
A.B. 1950, Western Maryland College

Homer Mark Jones — Utah
A.B. 1952, Brigham Young University

Sherman Avery Kent — Pa.
A.B. 1948, University of Pittsburgh

Arthur Seymour Keyser — Pa.
B.S. 1948, University of Pennsylvania

Russell Earl Madson — Utah
B.S. 1950, Brigham Young University

Robert Donald Rossiter — Va.
A.B. 1948, University of Pittsburgh
A.M. 1950, American University

William Joseph Ryan — Md.
A.B. 1948, A.M. 1949, Catholic University of America

Paul Wilson Scarbrough — Va.
A.B. B.S. 1952, Southeast Missouri State College

William Rhea Spicer — Va.
A.B. 1947, Lynchburg College

James Robert Tighe — D.C.
A.B. 1951, University of Chicago

October 15, 1955

[illegible] Watkins	Kans.	Emanuel Fleitman Lutz	Ohio
[illegible] Kansas State College		B.S. 1948, Ohio State University	
[illegible] Marshall Brown	S.C.	Marshall Mandeville, Jr.	Va.
B.B.A. 1953, University of Georgia		A.B. 1950, Dartmouth College	
[illegible] Lewis, Jr.	Mich.	Richard Mackie Mansfield	Ill.
[illegible]		B.S. in E.E. 1950, Milwaukee School of Engineering	
A.B. 1949, Michigan State College	S.D.	Jack Earl Roberts	Ariz.
[illegible] Wesley Cassels		B.S. 1952, Brigham Young University	
A.B. 1949, University of Denver	Md.	Louis Rosenstock	N.Y.
[illegible] Lee Cosby		A.B. 1948, Brooklyn College	
A.B. in Govt. 1951, The George Washington University	D.C.	A.M. 1949, New York University	
[illegible] Elson		Henry Albert Madison Sindler, Jr.	Va.
[illegible]	Md.	A.B. 1954, University of Maryland	
A.B. 1954, The George Washington University		William Paul Simmons, Jr.	Md.
[illegible] Gardner		A.B. 1950, The George Washington University	
B.S. 1949, M.S. 1950, The George Washington University	Nev.	George Rowley Wright	Del.
[illegible] Lawton Gardner		A.B. 1951, Washington College	
B.E.E. 1947, University of New Hampshire			

February 22, 1956

Paul Thomas Anderson	Va.	Arvin Morris Kruusak	Ohio
B.E.E. 1950, Massachusetts Institute of Technology		A.B. 1947, A.M. 1949, Denver University	
M.S. in E.E. 1952, Harvard University		Edwin John Mansena	Mich.
James Harold Barker	Mo.	A.B. 1952, Calvin College	
B.S. 1949, University of Missouri		Ronald Allen Rietz	Wash.
William Wade Bennett	Va.	[With distinction:]	
B.S. [illegible] West Point [illegible]		B.S. 1954, United States Coast Guard Academy	
B.S. in C.E. 1945, The Citadel	Pa.	Gideon Franklin Rodewald	Md.
[illegible] Bowers		B.S. in M.E. 1948, University of Maryland	
B.S. 1949, B.A.M. 1952, Pennsylvania [illegible]		Thomas Eugene Sisson	Md.
[illegible] Cummings		B.S. in Mec. Engr. 1951, Missouri School of Mines and Metallurgy	
A.B. 1950, [illegible] Dartmouth	Va.	William Thompson, Jr.	Md.
[illegible] Edward [illegible], Jr.		A.B. 1951, Harvard University	
[illegible] Pennsylvania State University	Pa.	Darrell William Wunder	Va.
A.B. [illegible] Hamilton		B.S. 1951, United States Coast Guard Academy	
B.S. 1949, University of Indiana	Md.		
[illegible] Lee Schantz			
B.S. in E.E. 1950, California Institute of Technology	Calif.		

Master of Laws

June 8, 1955

Robert Morgan Bass	Mass.	William Pleasant [illegible]	Iowa
B.S. in E.E.A. 1951, LL.B. 1954, Boston [illegible]		B.S. in Eng. 1950, Iowa State College	
[illegible] Lee, Jr.	D.C.	LL.B. 1954, University of Iowa	
[illegible] Edward Eaves Merchant		Robert Dennis Sickenger	Md.
A.B. [illegible] The George Washington [illegible]		B.S. 1941, University of Pennsylvania	
[illegible]		LL.B. 1954, The George Washington University	
A.B. 1947, LL.B. 1950, The George [illegible]	D.C.	Ramon E. Silvero	D.C.
[illegible]		B.S. 1947, LL.B. 1951, Georgetown University	
[illegible]	D.C.	[illegible]	
[illegible]		Stuart Tyson	Va.
[illegible]		B.S. Temple College of the City of New York	
[illegible]	Va.	M.P.A. 1949, New York University	
[illegible] Boston University		J.D. 1954, The George Washington University	
[illegible]	Md.		
[illegible] of Maryland		Walter Arthur Williams	Va.
[illegible] The George Washington [illegible]		A.B. [illegible] Randolph-Macon College	
		LL.B. 1952, University of Wisconsin	

Master of Laws in National University

Robert Edward Duckett — S.C.
B.S. 1936, Furman University
LL.B. 1953, National University

October 15, 1955

Isidore David Blumenfeld — N.Y.
B.S. in E.E. 1940, Case Institute of Technology
J.D. 1951, The George Washington University

Houng Han Kim — Korea
LL.B. 1949, Seoul University
M.C.L. 1954, The George Washington University

February 22, 1956

William Denny Dixon — Va.
A.B. 1951, Emory and Henry College
LL.B. 1954, University of Richmond

Thomas Nelson Gaspine — S.C.
A.B. 1946, LL.B. 1947, University of South Carolina

Edward George Gesio — D.C.
B.S. 1949, M.S. 1951, Purdue University
Dr. en Droit 1950, University of Lyon
LL.B. 1954, The George Washington University

Richard Hildreth — Va.
A.B. 1951, LL.B. 1953, The George Washington University

Eugene John Kinderman — D.C.
B.S. 1950, University of Illinois
LL.B. 1954, The George Washington University

Carlene Marvin Moore — Calif.
B.A. 1950, University of California
LL.B. 1953, Hastings College of Law

Morton Namrow — Fla.
B.S. 1947, University of Chicago
LL.B. 1954, University of Miami

George Henry Reed — Fla.
A.B. 1950, University of Florida
LL.B. 1950, The George Washington University

James Warren Tustin — Va.
A.B. 1948, Northwest Louisiana State College
LL.B. 1954, The George Washington University

John Lester Tierney — Wis.
A.B. 1950, University of Minnesota
LL.B. 1953, University of Wisconsin

Arnold Isadore Weber — Md.
Ph.B. 1949, Marquette University
A.M. 1950, Harvard University
LL.B. 1954, The George Washington University

Master of Comparative Law

June 8, 1955

Sanoy Bhavasuta — D.C.
LL.B. 1944, University of Thammasat, Thailand

Ahmed El Shalakany — Egypt
Licence en Droit 1944, Dip. in Econ. Science, University of Cairo

February 22, 1956

Ivan Sipkov — D.C
LL.B. 1940, University of Sofia
LL.D. 1947, University of Innsbruck

Master of Comparative Law (American Practice)

June 8, 1955

Alois Bohmer — D.C.
J.D. 1951, Charles University of Prague

Ely Rummandel — Md.
Diploma in Law 1940, University of Tartu, Estonia

Stephen Kocvara — D.C.
LL.D. 1951, Charles University of Prague

February 22, 1956

Peter Alexander Heidenberger Md.
LL.B. 1948, LL.D. 1949, University of Munich

Zenon Stankowski D.C.
J.D. 1927, University of Cracow

Vaino John Rosmandel Md
Diploma 1942, LL.M. 1943, University of Tartu
Ph.D. 1945, Friedrich Schiller University

Doctor of Juridical Science

June 8, 1955

Harold Vincent Boisvert Md
Ph.B. 1940, University of Notre Dame
LL.B. 1947, Catholic University of America
Dissertation: "A Study and Comparison of the Provisions of the Administrative Procedure Act and the English Statutory Instruments Act"

STUDENTS REGISTERED IN THE LAW SCHOOL

SUMMER TERM 1955

FALL AND SPRING TERMS 1955-56

A

Abbott, Frank LeRoy — D.C.
A.B. 1950, Central College, Mo.

Abdulla, Mahammad — India
A.B. 1934, Andhra University
B.L. 1947, University of Madras

Abler, Woodruff Preston — Wyo.
B.S. 1954, University of Utah

Acevedo, Fernando — Md.
B.S. 1948, University of Maryland

Acker, Watson James, Jr. — Pa.
A.B. 1951, University of Pennsylvania

Adams, Ray Franklin — Va.
B.S. 1948, Virginia Polytechnic Institute

Adams, Robert Lumsden — Fla.
A.B. 1951, University of Pennsylvania

Aegerter, Richard Edward — Idaho
B.S. in Ag.Eng. 1948, B.S. in C.E. 1949, Utah State Agricultural College
LL.B. 1955, The George Washington University

Aitken, Robert Bruce — Mich.
A.B. 1952, Brown University
LL.B. 1954, University of Michigan

Aitken, Richard Lewis — Mo.
B.E.E. 1951, Cornell University

Aitkens, Caroline Fenton — Va.
A.B. 1953, The George Washington University

Akrawi, Anwar Isaac — Va.
B.S. in B.A. 1951, Georgetown University

Al Hashimi, Ghazi Mahmoud — Iraq
Licentiate in Law 1948, Iraq Law College

Allaman, Rodger Neil — Mo.
A.B. 1949, LL.B. 1952, University of Missouri

Allen, Edward Clayton — Md.
A.B. 1950, Gettysburg College

Allen, Richard Chandler — Va.
A.B. 1949, Knox College

Anderson, Kenneth Gaston — N.C.
A.B. 1952, University of North Carolina

Andreadis, Thomas Minor, Jr. — Md.
A.B. 1953, Haverford College

Anderson, William Howard — D.C.
B.S. in Com. 1951, State University of Iowa

Andrew, James — D.C.
B.S. 1950, M.S. 1951, Massachusetts Institute of Technology

Appleman, William Harris — D.C.
A.B. 1953, The George Washington University

Arnstein, Ellis Jacobs — D.C.
A.B. 1952, The George Washington University

Arseneau, Paul Florian — Va.
B.E.E. 1950, Marquette University
M.S. in E.E. 1951, Harvard University
J.D. 1956, The George Washington University

Atchison, Charles David — Mo.
A.B. 1950, University of Missouri

Atwood, Martha Louise — N.Y.
A.B. 1951, University of Vermont

Ausbeck, Paul James — Ind.
B.S. 1952, Purdue University

Austin, Robert Earl — Pa.
B.S. in E.E. 1950, Pennsylvania State University

Avery, Reynold Lee — Md.
B.S. 1951, Bowling Green College of Commerce

B

Bailey, J. Edgar — Pa.
A.B. 1950, University of Pittsburgh
LL.B. 1955, The George Washington University

Baine, Herman Hershel — Ala.
B.S. 1948, University of Alabama

Baird, Rev. Alva — Va.
A.B. 1937, University of Richmond

Baker, Raymond Nicholas — D.C.
B.S. 1946, U.S. Naval Academy

Baker, Weldon Lee — Pa.
Bachelor, Charles Adams — Md.
A.B. 1950, The George Washington University

Baldinger, Willis Jerome — D.C.
A.B. 1948, Yale University

Baldwin, Francis Xavier — D.C.
B.S. in F.S. 1948, Georgetown University

Baltino, Arturo Eduardo — Md.
Candidate of Law 1949, University of Lisbon

Barbee, William Clifford — Va.
A.B. 1950, LL.B. 1955, The George Washington University

Barber, Frank David — Miss.
A.B. 1954, Mississippi Southern College

Barham, Thomas William — Va.
B.S. 1954, Virginia Polytechnic Institute

Barnard, Ralph Roser — Va.
B.E.E. 1949, Cornell University
LL.B. 1955, The George Washington University

Barry, Frances Helen — D.C.
A.B. 1946, Dunbarton College of the Holy Cross

Bateman, Samuel Leon, Jr. — Pa.
B.S. in E.E. 1955, Drexel Institute of Technology

Banks, John Wilson — Conn.
B.S. 1929, Kansas State College of Agriculture and Applied Science
J.D. 1932, The George Washington University

Bannan, Stanley Norman — Pa.
B.B.A. 1951, University of Pittsburgh
LL.B. 1954, The George Washington University

Bannan, James Harold — Mo.
B.S. 1949, University of Missouri
J.D. 1952, The George Washington University

Barnes, Mary Jean — Mo.
A.B. 1951, The George Washington University

Barnstable, John Gardner — Va.
B.S. 1950, University of New Hampshire
LL.B. 1952, The George Washington University

Barr, Edith Custer — Md.
A.B. 1925, Western Maryland College

Barrett, Alan Prentiss — D.C.
A.B. 1948, University of Virginia

Bean, David Freeman — Utah
B.S. 1954, University of Utah

Beatty, George L. — Ariz.
A.B. 1948, New Mexico College of Agriculture and Mechanic Arts

Beauregard, Pierre Gustave Toutant — D.C.
A.B. 1948, University of the South

Beeler, James Selby — Kans.
B.S. 1934, McPherson College

Beer, Samuel — N.J.
A.B. 1937, New York University

Bell, William Wade — Fla.
B.S. in C.E. 1947, The Citadel
J.D. 1950, The George Washington University

Bennett, William Rudolph — Md.
LL.B. 1953, The George Washington University

Benson, William L., Jr. — Wash.
A.B. 1950, University of Washington

Bentley, Charles Frederick — Pa.
A.M. 1951, Clarion College

Berger, Leo, Robert — S.C.
Ph.D. 1951, University of South Carolina

Berger, Vivian — Fla.
LL.B. 1948, Florida State College for Women
J.D. 1949, The George Washington University

Bergevin, Lucien Joseph — Nev.
B.S. 1950, University of Nevada

Bergstresser, Charles Mitchell — Pa.
B.S. in E.E. 1949, Lehigh University

Berkowitz, Edward Frank — D.C.
A.B. 1951, University of Maryland
J.D. 1954, The George Washington University

Berry, Mary — Ohio
B.S. 1949, Indiana
M.B.A. 1951, Indiana

Bertsch, Robert Charles — Md.
B.S. 1951, University of Denver

Bevan, Arthur Dewees — Pa.
B.S. 1924, Drexel Institute

Beyer, William Robert — D.C.
B.S. 1951, University of Maryland

Bess, Lee James — D.C.
A.B. 1950, Duke University

Best, Stephen Lewis — Md.
A.B. 1951, Kenyon College

Betts, Ellen Cecile — D.C.
A.B. 1954, University of California

Bickley, John Lewis — Fla.
A.B. 1948, The Citadel

Biermat, Daniel Jacob — Md.

Bigger, Donald Earle — Va.
B.S. 1951, University of Colorado
J.D. 1954, LL.M. 1955, The George Washington University

Bisselle, Sara Elizabeth — D.C.
A.B. 1951, Randolph College

Bisson, Francis — Idaho
B.S. 1951, Ricks College

Black, Harvey — Calif.

Black, John Woodland — Md.
A.B. 1941, University of Washington
M.I.A. 1949, Columbia University

Blackmon, Robert John — Va.
A.B. 1945, LL.B. 1947, Cornell University

Blanton, Chessley Davis — Md.
A.B. 1951, The George Washington University

Blatt, Richard Eugene — Texas
A.B. 1952, University of Washington

Blenkhorn, Arthur, Jr. — D.C.
A.B. 1950, Cathy College
LL.B. 1953, Harvard University

Blumenthal, Philip H. — N.Y.
B.S. in E.E. 1951, Columbia University

Bloch, Samuel Herman — Md.
B.S. 1950, Brooklyn College

Block, Victor Leonard — D.C.
A.B. 1951, Yale University

Blumenfeld, Sheldon Jay — Wis.
B.S. 1952, Marquette University

Boerner, Vilmont Rutland — Mich.
A.B. 1941, Olivet College

Bogarth, Arnold Louis — Md.
Doctor of Law 1951, University of Bucharest
Doctor of Law 1951, University of Paris

Bolte, Richard Evans — Ariz.
B.S. 1948, Harvard College

Bonaparte, Caroline Pierrepont — N.Y.
B.S. 1951, Fordham University

Bond, Russell Evans — Md.
A.B. 1951, Washington Missionary College

Bonnell, Bill Meredith — Va.

Bonnett, Jack — Pa.
B.S. 1950, B.A.M. 1951, Pennsylvania State University
J.D. 1954, The George Washington University

Boston, Mack Edward — Va.
B.S. 1951, Arizona State College

Bottomley, William Edward — Mass.
A.B. 1951, Clark University

Boulton, Donald Dixon — Wis.
B.S. in C.E. 1950, University of Wisconsin

Boulware, Arnold Hugh Oliver — Va.
A.B. 1950, Boston University
LL.B. 1953, Boston University

Bourne, Robert Dallas N.Y.
A.B. 1930, University of Michigan
Bowers, Charles Eastman Md.
B.S. 1923, University of Maryland
Bowers, Thomas IV Tenn.
LL.B. 1951, National University
Bowering, Arthur Livingston Ga.
B.E.E. 1942, Georgia Institute of Technology
Bowersox, Anne Wells Md.
A.B. 1929, University of North Carolina
A.M. 1931, Radcliffe College
Bowersox, Stanley Irwin D.C.
A.B. 1950, The George Washington University
Bowland, Martin N.Y.
B.S. to B.A. 1951, Ohio State University
Brewer, Charles Moulton Md.
A.B. 1923, University of Maryland
Brickenkamp, Cecil Francis N.Y.
LL.B. 1948, Fordham University
LL.M. 1953, The George Washington University
Bridgers, Harvey Clifton Pa.
A.B. 1951, Grove City College
Brill, LeRoy Albert D.C.
LL.B. 1948, The George Washington University
Brindle, Thomas Allen N.Y.
B.E.P. 1932, Villanova College
Brisbin, Nathan M. Mich.
B.C. to C.P.E. 1937, Wayne University
Broaddus, Lewis Gray Va.
A.B. 1935, Lynchburg College
Brookhart, John Spencer, Jr. Md.
B.S. 1953, University of Maryland
Brooks, Allen Fleming Md.
A.B. 1951, The Citadel
Brown, Ainsworth Howard Md.
A.B. 1922, Gettysburg College
Brown, Charles Ellis Md.
B.S. to C.E. 1942, University of Maryland
Brown, George Slavin, Jr. Va.
A.B. 1940, Harvard University
Brown, James Mitchell S.C.
B.B.A. 1951, University of Georgia
LL.B. 1953, The George Washington University
Brown, Leonard David Ohio
B.S. 1951, Bowling Green State University
Brown, Miles Lowry Va.
A.B. 1949, Lynchburg College
Brown, William Bruce Iowa
B.S. (Ind. M.E.) 1951, Iowa State College of Agriculture and Mechanic Arts
Browne, William Robert Ark.
B.C.E. 1929, Cornell University
Brownfield, Edward Jones Va.
Brune, Mona Constance Md.
A.B. 1950, Trinity College
A.M. 1954, Catholic University of America
Bruce, Richard Hayne Md.
B.C.E. 1948, Clarkson College of Technology
Buckley, James Joseph N.H.
A.B. 1942, St. Anselm's College
Buckley, Robert Bertram D.C.
B.S. 1949, LL.B. 1950, The George Washington University
Buell, Bruce Temple Colo.
A.B. 1951, Princeton University
Bullock, Joseph Jay Utah
B.S. 1944, Brigham Young University
Bunches, Thomas Martin III D.C.
B.S. 1951, University of Maryland
Bunn, Carl Roy Va.
A.B. 1948, Simpson College
A.M. 1949, State University of Iowa
Burns, Wendell Edwards D.C.
B.S. 1952, Washington and Lee University
Burrows, Joseph Chandler D.C.
B.S. 1922, Virginia Polytechnic Institute
J.D. 1923, University of Chicago Md.
Bush, Dan Foster
B.S. in E.E. 1942, South Dakota School of Mines and Technology D.C.
Bush, Millard Marshall
A.B. 1949, LL.B. 1951, University of Mississippi Utah
Butterfield, Franklin Herman
A.B. 1949, University of Utah Md.
Byerly, Daniel Stevens
A.B. 1933, University of Virginia

C

Mo.
Cagle, Charles Meredith
A.B. 1951, Southwestern University Va.
Cahill, Donald Andrew
A.B. 1950, Lake Forest College Md.
Calvert-Lisle, William Rawlings
B.B.A. 1954, University of Cincinnati Va.
Calhoun, Charles Augustine
A.B. 1950, Wake College S.C.
Caldwell, Joseph Moon
B.S. 1949, University of South Carolina Pennsylvania
Calhoun, Mason
LL.B. 1927, University of the Philippines Mass.
Callaghan, Richard Lawrence
B.E. 1950, Manhattan College D.C.
Callahan, John
A.B. 1949, Johns Hopkins University
LL.B. 1951, University of Maryland Md.
Campbell, James Rhodes
B.A. or B.E. 1941, Ohio Northern University Md.
LL.B. 1947, National University
Cannon, Edward Howard
B.S. 1952, University of Maryland Pa.
Cannon, Howell Watson
B.S. 1950, University of Missouri Md.
Cantin, Thomas Wallace, Jr.
A.B. 1950, University of Virginia Md.
Capone, Orlando Arnold
A.B. 1951, University of North Carolina N.Y.
Caras, Phyllis
B.B.A. 1951, College of the City of New York Ala.
Carmichael, John Lesley, Jr.
A.B. 1950, Vanderbilt University D.C.
A.M. 1951, Columbia University
Carpenter, Helen Ann N.Y.
B.S. 1950, Syracuse University
Carpenter, Robert Lewis, Jr. Md.
A.B. 1951, The George Washington University

Cole, John Page, Jr. D.C.
B.S. 1913, Alabama Polytechnic Institute

Coleman, Beverly Mosby Va.
B.S. 1923, U.S. Naval Academy
LL.B. 1926, The George Washington University

Coll, Rudolph Wayne D.C.
A.B. 1924, The George Washington University

Collins, Lee Lee Va.
B.S. 1922, Mississippi State College

Colliton, Charles Richard Md.
A.B. 1923, Susquehanna State College

Collins, Julius LeRoy Mich.
A.B. 1922, Michigan State College
LL.B. 1924, The George Washington University

Compston, Lewis Robert Pa.
A.B. 1922, Muhlenberg College

Coleson, Charles Wendell Va.
A.B. 1923, Bowen University

Connelly, Paul Phillips Del.
B.S. 1924, Case Institute of Technology

Connery, Edward Aubrey, Jr. Pa.
B.S. 1921, Thomas College
M.S. 1922, LL.B. 1926, Pennsylvania State University

Conway, Neal John Ky.
B.S. 1923, Georgetown University

Conyard, Neal Grant Cal.
B.S. in M.E. 1924, Oregon State College

Cook, Howard Lee, Jr. Md.
A.B. 1923, University of Maryland

Cook, William Holmes Conn.
LL.B. 1925, Washington University

Cooper, Edwin Bowers Kans.
A.B. 1924, Municipal University of Wichita

Corse, Cecil Ralph, Jr. Mass.
B.S. 1926, University of Michigan
LL.B. 1931, The George Washington University

Corson, Eugene Stillman N.Y.
B.E.E. 1918, Cornell University

Corson, Glenn Hunter Va.
A.M.E. 1915, The George Washington University

Cowan, Cecil Collins Md.
A.B. 1923, Ohio Wesleyan University

Cowden, Elsie Oreg.
LL.B. 1924, Northwest University

Cowie, Alexander Va.
A.B. 1908, Hampden Sydney

Cowperthwaite, Jeremy Bullard S.C.
B.S. 1926, Florida State University

Cox, Hugh Andrew Mass.
B.S. 1924, University of Massachusetts

Cozens, Ronald Stone D.C.
B.S. 1920, Wabash College
A.M. 1924, Columbia University

Crandon, Silas Vinson, Jr. Va.
A.B. 1919, University of Cincinnati
LL.B. 1926, The George Washington University

Craven, Alexander Arnold N.Y.
A.B. 1924, Fordham University

Craven, Thomas Raymond N.Y.
A.B. 1924, St. Bonaventure University

Crawford, George Franklin Iowa
A.B. 1920, University of California at Los Angeles

Crippen, Richard Harlow D.C.
A.B. 1922, Boston University
LL.B. 1925, Columbia University

Crist, Allen Ludlow Va.
LL.B. 1925, Fairmont University

Crockett, Paul Tex.
B.S. 1922, The George Washington University

Crosby, Samuel Sherwood Va.
A.B. 1924, College of William and Mary

Cross, Leroy Leo Hawaii
A.B. 1926, Northwestern University

Cross, Robert Clarence Pa.
A.B. 1911, College of the Holy Cross

Crowley, Joseph N.Y.
B.S. 1922, New York University

Crowley, William Bernard Md.
A.B. 1923, University of Maryland

Cuddy, Lloyd Leonard, Jr. D.C.
A.B. 1921, The George Washington University

Cunningham, Christopher Stephen Fla.
B.S. 1911, U.S. Coast Guard Academy

Cunningham, William Alonzo Texas
A.B. 1922, University of Houston

Curran, Walter Thomas Md.
B.S. 1923, University of Maryland

Curtis, Roy Lincoln Ill.
LL.B. 1917, Lincoln University

Custis, John Clarence Va.
B.S. 1923, The George Washington University

Cutler, Robert Woodward Va.
A.B. 1923, University of Virginia

Dahlgren, Thomas Vs.
B.S. 1923, Virginia State College

Dalisay, Gregorio Thailand
LL.B. 1911, Philippine Normal Academy
Diploma in Government, Columbia University

Dalton, Thomas Raymond Calif.
A.B. 1923, Santa Clara College

Daly, Thomas Augustine D.C.
A.B. 1911, A.M. 1911, Manhattan College
LL.B. 1914, National University
LL.M. 1915, The George Washington University

Daniel, Price Ohio
A.B. 1923, Princeton University

Daniel, Robert Parker Fla.
A.B. 1923, Rollins College
LL.B. 1926, Georgetown University

Darby, Thomas Edwin Md.
A.B. 1923, Johns Hopkins University

Davis, Arthur Vining Va.
A.B. 1923, The George Washington University

Davis, Edmund Monroe
A.B. 1923, Randolph Macon College

Davis, Edward Lee Va.
A.B. 1923, Richmond University
LL.B. 1926, Harvard

Davis, Frederick Bowie Md.
A.B. 1923, Princeton University
LL.B. 1926, Harvard

Davis, Jesse Bowen
A.B. 1923, Washington and Lee University

Davis, Lawrence Wilmer, Jr. Va.
A.B. 1923, Randolph Macon College

Davis, Thomas Edward Md.
A.B. 1923, Washington College

Davis, Wilbur Fremont
M.S. 1923, Ohio State University

Dawson, Cecil Ohio
A.B. 1923, Stanford University

Day, Edmund Ezra Calif.
A.B. 1923, Cornell University

Dean, Arthur Hobart D.C.
A.B. 1923, Syracuse University

Deane, Thomas Jefferson Va.
A.B. 1923, Roanoke College
LL.B. 1926, The George Washington University

Dearborn, Ned Hilton Ill.
A.B. 1923, The George Washington University

Deaton, Thomas Jefferson Va.
A.B. 1923, Randolph Macon College

Deavers, Ralph Ohio
A.B. 1923, Ohio Wesleyan University

Deckelbaum, Samuel Va.
A.B. 1923, University of Virginia

Dehoney, Thomas Jefferson Va.
A.B. 1923, Randolph Macon College

Delaney, Joseph Vincent Mass.
A.B. 1923, Boston College

Delaney, Thomas Joseph Mass.
A.B. 1923, Boston College

Dellinger, Walter Calvin, Jr. N.C.
A.B. 1923, Davidson College

Dempsey, Thomas Joseph Mass.
A.B. 1923, Boston College

Denny, Ludwell Va.
A.B. 1923, Washington and Lee University

Dent, Frederick Brune, Jr. Md.
A.B. 1923, Princeton University

Dent, Robert Lee Va.
A.B. 1923, Washington and Lee University

Dent, Thomas Jefferson Va.
A.B. 1923, Washington and Lee University

Dewey, Charles Sumner Mass.
A.B. 1923, Harvard University

Dewey, Thomas Edmund Mich.
A.B. 1923, University of Michigan

Dickinson, Edward Va.
A.B. 1923, Washington and Lee University

Dickinson, Frederick Gray Va.
A.B. 1923, Washington and Lee University

Dickinson, Jacob McGavock Tenn.
A.B. 1923, Princeton University

Dickinson, John Pa.
A.B. 1923, Princeton University

Dickinson, Robert Lee Va.
A.B. 1923, Washington and Lee University

Dickinson, Thomas Nelson Va.
A.B. 1923, Washington and Lee University

Dickinson, William Lee Va.
A.B. 1923, Washington and Lee University

Dickson, Robert Lee Va.
A.B. 1923, Washington and Lee University

Dietrich, Noah Neb.
A.B. 1923, University of Nebraska

Dillon, Clarence Douglas N.Y.
A.B. 1923, Harvard University

Dillon, Douglas N.Y.
A.B. 1923, Harvard University

Dillon, Lee Neb.
A.B. 1923, University of Nebraska

Dillon, Sidney Neb.
A.B. 1923, University of Nebraska

Dimmick, Robert Lee Va.
A.B. 1923, Washington and Lee University

Dinsmore, Hugh Alexander Va.
A.B. 1923, Washington and Lee University

Dixon, Frank Murray N.J.
A.B. 1923, Princeton University

Dixon, Thomas Edward Va.
A.B. 1923, Washington and Lee University

Dodge, Cleveland Hoadley N.Y.
A.B. 1923, Princeton University

Dodge, Joseph Morrell Mich.
A.B. 1923, University of Michigan

Dodge, Norman Thomas Mich.
A.B. 1923, University of Michigan

Dodge, Robert Mich.
A.B. 1923, University of Michigan

Dodge, Robert Cleveland N.Y.
A.B. 1923, Princeton University

Dodge, Stanley Mich.
A.B. 1923, University of Michigan

Dodge, Walter Mich.
A.B. 1923, University of Michigan

Dodge, William Mich.
A.B. 1923, University of Michigan

Dodge, William Earl Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, Jr. Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 3d Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 4th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 5th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 6th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 7th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 8th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 9th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 10th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 11th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 12th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 13th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 14th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 15th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 16th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 17th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 18th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 19th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 20th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 21st Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 22nd Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 23rd Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 24th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 25th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 26th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 27th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 28th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 29th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 30th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 31st Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 32nd Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 33rd Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 34th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 35th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 36th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 37th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 38th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 39th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 40th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 41st Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 42nd Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 43rd Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 44th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 45th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 46th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 47th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 48th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 49th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 50th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 51st Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 52nd Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 53rd Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 54th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 55th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 56th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 57th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 58th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 59th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 60th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 61st Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 62nd Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 63rd Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 64th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 65th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 66th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 67th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 68th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 69th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 70th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 71st Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 72nd Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 73rd Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 74th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 75th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 76th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 77th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 78th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 79th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 80th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 81st Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 82nd Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 83rd Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 84th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 85th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 86th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 87th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 88th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 89th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 90th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 91st Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 92nd Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 93rd Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 94th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 95th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 96th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 97th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 98th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 99th Mich.
A.B. 1923, University of Michigan

Dodge, William Ellis, 100th Mich.
A.B. 1923, University of Michigan

Coulter, Kenneth Brewster Va.
A.B. 1922, Princeton University
Craven, Seaman Wesley S.D.
A.B. 1923, University of Denver
J.D. 1931, The George Washington University
Crosby, Clarence William, Jr. Va.
B.S. 1940, University of Pittsburgh
Cruse, Albert Gallatin, Jr. Va.
B.S. in M.E. 1940, University of Kentucky
LL.B. 1950, The George Washington University
Cruse, James Wendell D.C.
B.S. 1941, Northwestern University
M.B.A. 1947, Harvard University
Cramer, Morris Medford Pa.
A.B. 1922, Pennsylvania State University
Cryer, Marie Alice D.C.
LL.B. 1928, National University
Cunningham, James Carpenter R.I.
B.S. 1937, University of Rhode Island
Cunningham, George John Pa.
B.S. 1939, University of Pittsburgh
Craven, John Emory Md.
B.S. in C.E. 1926, Cornell University
M.S. in C.E. 1947, California Institute of Technology
Ph.D. 1951, State University of Iowa
Crawford, Clayton Eugene W. Va.
A.B. 1937, West Virginia Institute of Technology
A.M. 1940, Marshall College
Crawford, George Alvin Iowa
B.S. 1918, U.S. Naval Academy
Cockerham, Ira Judson Va.
B.S.E. 1930, The George Washington University
Crowley, William James III Utah
A.B. 1950, The George Washington University
Crockett, Wendell Reiter Hawaii
A.B. 1941, Western Michigan College of Education
Cromartie, William Adrian Va.
B.A. 1948, University of Georgia
LL.B. 1949, St. John's University, N.Y.
Crouch, Hazel Alleman N.Y.
B.M.E. 1918, The George Washington University
Cruse, William James, Jr. Okla.
B.S. 1940, U.S. Naval Academy
Cunningham, Lillie Rose D.C.
A.B. 1940, The George Washington University
Curl, Byron Quinton D.C.
A.B. 1911, J.D. 1948, The George Washington University
Curtis, John Benjamin Ohio
B.D.E. 1941, Penn College
LL.B. 1949, The George Washington University
Curtis, Harold McClellan Mich.
A.B. 1924, University of Michigan
Cuppett, Robert Franklin Va.
B.C.E. 1919, LL.B. 1941, The George Washington University
Curtis, Mildred Rose Md.
B.S. 1924, Georgetown University
Cutlip, Charles Mich.
A.B. 1941, The George Washington University

Cykowski, Stanley Va.
A.B. 1946, University of Massachusetts

D

Dailey, Henry Elwood Va.
A.B. 1923, Lenoir University
Dalton, Marvin Kenneth Md.
A.B. 1938, St. Mary's University
Dannaker, Richard Welton West
A.B. 1929, University of Washington
A.M. 1948, Fletcher School of Law and Diplomacy
M.B.A. 1934, Harvard University
LL.B. 1938, The George Washington University
Davis, William Herbert N.Y.
B.Ch.E. 1923, LL.B. 1926, Cornell University
Davis, Sidney Donohoe Va.
A.B. 1942, New York University
LL.B. 1951, The George Washington University
Davis, Howard Kent, Jr. Va.
B.S. in M.E. 1938, West Virginia University
Davies, John George, Jr. N.Y.
A.B. 1937, Norwich University
D'Agostino, Leonard Va.
B.S. 1948, University of Buffalo
Davidson, William Horace Pa.
B.S.A. 1946, LL.B. 1948, University of Georgia
Daughtry, Joseph Warren Miss.
B.S. 1930, Harvard University
M.B.A. 1934, University of Pennsylvania
LL.B. 1941, The George Washington University
Davis, John Thomas Clinton II Va.
A.B. 1930, LL.B. 1941, The George Washington University
Davis, Stanley Spooner D.C.
B.S. 1941, American University
Davis, Mary Thornwall Del.
B.Ch.E. 1911, University of Delaware
Davis, Earl Eugene Va.
A.B. 1935, Randolph-Macon College
Davis, Lindsay Stockard
A.B. 1941, Maryland College
LL.B. 1950, The George Washington University Va.
Davis, Robert Weedon D.C.
A.B. 1941, Randolph College
Davis, Clyssee
A.B. 1951, State University of Iowa Ia.
Davis, William Henry D.C.
A.B. 1911, [illegible] College
Davidson, Malcolm Augustine
A.B. 1948, College of William and Mary Conn. Md.
Day, Calvin Woodward
Day, Caroline Hubbard
University of Maryland Spain
B.S. 1950
de Echegaray, Miguel
A.B. 1952, LL.B. 1955, The George Washington University D.C.
Davila, Margarita Nemesio
LL.B. 1950, National University Philippines
De Guzman, Ramiro D.
De Guzman, Manuel L. Quezon
LL.B. 1950, National Institute

De Lotto, Donald
A.B. 1954, Drake University — Va
De Luca, Anthony Peter
B.S. 1951, Brooklyn Polytechnic Institute — Va
Ludlow, John Phillip
B.A. 1950, Iowa State College of Agriculture and Mechanic Arts — D.C.
Dery, Henry Gruber
A.B. 1941, Franklin and Marshall College — S.C.
Dery, Stanley Robert Ludwig
A.B. 1951, Pennsylvania State University — D.C.
Desautels, Hamilton
A.B. 1946, Yale University — D.C.
LL.B. 1948, Harvard University
LL.M. 1949, Harvard University
DeVaney, Marion William
A.B. 1948, University of Michigan — Mich.
De Vinney, Paul Hayes
A.B. 1954, The George Washington University — Va.
Devine, Frederick Joe
B.S. in E.E. 1948, University of Illinois — Ohio
LL.B. 1951, The George Washington University — D.C.
Dial, Lawrence
A.B. 1949, University of Wyoming — Va.
Diamond, Louis Leonard
A.B. 1954, The George Washington University — D.C.
Dick, Everett
A.B. 1948, Princeton University — Va.
Dickey, Morgan Shaw
A.B. 1954, Rutgers College — N.J.
Dickinson, Malcolm Farrar
A.B. 1948, The George Washington University — Md.
Dickinson, Lowell Farrar
B.S. in E.E. 1948, Pennsylvania State University — D.C.
Dieter, Harry Earl
B.S. in E.E. 1951, Cornell University — N.Y.
Dietrich, Frederick Christian
A.B. 1950, The George Washington University — Md.
Di Florio, Florio J.
M.C.E. 1951, Catholic University of America — D.C.
Dill, Clarence Cannon, III
A.B. 1951, University of North Carolina — N.C.
Dillon, Francis
B.S. 1948, New York University — N.Y.
Dimock, Edward Jackson, Jr.
A.B. 1951, Williams College — Md.
Dinan, Robert Francis
A.B. 1950, Georgetown University
LL.B. 1953, Georgetown University
M.A. 1954, Woodrow Wilson School of Public and International Affairs, Princeton University — Va.
Dinsmore, Hugh Allen
A.B. 1951, The George Washington University
Ph.D. 1954, University of Pennsylvania
Dirksen, Everett McKinley
A.B. 1917, Illinois Wesleyan University — Va.
LL.B. 1919, University of Illinois
Dirksen, Howard Everett
B.S. 1949, Marquette University — Pa.
LL.B. 1951, Harvard Law School
Dirksen, Robert Allen
B.S. 1951, University of Dayton — Ohio
Dirksen, Thomas Everett
A.B. 1953, University of Illinois — Md.

Dominguez, John Francis
A.B. 1950, Southwestern State College — Texas
LL.B. 1953, The George Washington University
Donahue, David Lawrence
A.B. 1954, Mercer University College — Fla.
Dooley, Edward Joseph
B.S. 1949, Syracuse University — Md.
Drabicki, Jaroslaw A.
A.B. 1951, Washington and Lee University — D.C.
Drake, Hugh Hess
B.S. in E.E. 1951, University of Colorado — Colo.
Draper, Henry E.
B.S. 1954, Brigham Young University — Utah
Driscoll, William John
B.B.A. 1951, Manhattan College — N.Y.
Duczynski, Rose Eleanor
B.S. 1951, Rutgers University — N.J.
Duncanhasdinnaya, Pramot
LL.B. 1948, University of Dhammasat — Thailand
Dunlap, John Clark
A.B. 1954, University of Washington — Mo.
Dunn, Algernon Sidney
A.B. 1948, B.E.A. 1949, University of Texas — Texas
LL.B. 1951, The George Washington University
Duvall, Richard Grant
A.B. 1949, University of South Carolina — S.C.
LL.B. 1951, The George Washington University
Dwyer, John Hart
A.B. 1951, Princeton College — D.C.
Dwyer, Ralph Herbert, Jr.
A.B. 1954, University of Michigan — D.C.
Dyhouse, Alfred Charles
A.B. 1951, The George Washington University — Va.
Dykstra, Roger Sandall
B.S. 1954, University of Florida — Va.
Dyer, James Wesley
A.B. 1951, Brigham Young University — Va.
Dyer, Richard Hennessy
A.B. 1943, Yale University — D.C.

E

Eaney, William Norman
A.B. 1949, The George Washington University — Calif.
Eberly, Ruth Elsey
A.B. 1954, The George Washington University — Nebr.
Ebert, Eugene
A.B. 1950, LL.B. 1953, The George Washington University — D.C.
Echelson, Malcolm Preston, Jr.
B.S. in C.E. 1948, Virginia Military Institute — Va.
Edelsberg, Theodore Edward
A.B. 1949, LL.B. 1951, The George Washington University — D.C.
Edelstein, Sidney Richard
B.S.C.E. 1951, University of Delaware — D.C.
Edmonds, Preston Lee
A.B. 1949, University of California at Los Angeles — Va.
Edson, Hugh George
Doctor of Law 1954, Chosen University, Czechoslovakia — Va.

Ellson, Larry M. — Idaho
A.B. 1952, Idaho State College

Elmer, Robert Sydney — D.C.
A.B. 1940, Reed College

Elsie, Walter John — Pa.
B.S. 1948, Carnegie Institute of Technology
M.S. 1952, Syracuse University

Elsner, Richard — D.C.
A.B. 1951, University of Virginia

Emhardt, Charles David — Va.
B.S. in M.E. 1951, Purdue University
LL.B. 1955, Harvard University

Emery, George Meade — Wash.
A.B. 1954, The George Washington University

Engle, Lieut. Thomas Francis — Va.
A.B. 1950, University of Wisconsin

Engle, Samuel William — Pa.
B.S. 1948, Pennsylvania State University

Engstrom, Arnold Noel — Utah
B.S. 1951, University of Utah

Ennis, Roger Wayne — Va.
B.S. 1951, University of California

Ennis, William Lary — Md.
B.S. in M.E. 1951, University of Maryland

Enrietto, Louis Nicholas — N.J.
A.B. 1950, Muhlenberg College

Epstein, Jerome Howard — D.C.
A.A. 1948, University of Maryland

Erickson, William Ross, Jr. — N.C.
M.M.E. 1951, North Carolina State College of Agriculture and Engineering

Erney, Wade — D.C.
A.B. 1951, Hannibal-LaGrange College

Ernstberger, Samuel Jones — Md.
B.A. 1950, University of Maryland

Ervin, John Patterson — Va.
A.B. 1952, University of Virginia

Esmerado, John — Nev.
B.S. 1948, U.S. Naval Academy

Esposito, Frank Joseph — D.C.
B.S. 1950, The George Washington University

F

Fair, Charles J. — Mo.
LL.B. 1952, University of Missouri

Fairchild, John W. — Md.
A.B. 1951, Harvard University

Fair, Thomas — Va.
A.B. 1948, The George Washington University

Fairfax, Baltimore Lewis — Pa.
A.B. 1951, Duquesne University

Fairchild, John Ross — Ohio
B.S. 1950, Western Reserve University

Fairchild, William Tyler — Calif.
A.B. 1948, Pomona College

Fairell, George Edgar — Calif.
A.B. 1950, Stanford University

Falkenau, Ralph Henry — Va.
A.B. 1950, The George Washington University

Falk, Donald Conrad — Va.
B.E. in E.M.E. 1952, Purdue University

Falkner, Edmund Hayes — D.C.
A.B. 1954, The George Washington University

Fenwick, Rockwood Heath — Pa.
A.B. 1934, St. Vincent College

Fern, Benjamin Rudard — D.C.
A.B. 1942, Queens College

Ferrara, James Joseph — Conn.
A.B. 1948, Rider College
LL.B. 1954, Southeast University

Ferrebee, John Stirling — Va.
A.B. 1952, Davidson College

Ferry, Charles Joseph — W. Va.
B.S. 1951, West Virginia University

Fetter, Donald Henry — Va.
B.S. in M.E. 1940, University of Notre Dame

Field, Alexander Raymond — Va.
B.S. in Aero E. 1952, University of Michigan

Filcik, Julius Paul — Md.
B.S. in Ed. 1951, Pennsylvania State Teachers College, Indiana
M.S. 1955, The George Washington University

Finch, Warren Gilcrist — N.J.
B.E. 1942, M.E. 1950, Johns Hopkins University
LL.B. 1948, M.B.A. 1949, Temple University
LL.M. 1959, The George Washington University

Finnegan, Maxine Brimley — Ill.
B.S. 1949, U.S. Military Academy
LL.B. 1951, University of Virginia

Fiore, Stanley Alfred — Md.
B.B.A. 1950, University of Miami

Fishburne, Ralph Upton — Va.
A.B. 1948, University of Richmond

Fisher, Stephen Gilbert — Pa.
A.B. 1952, The George Washington University
A.M. 1953, American University

Fisher, Fred — D.C.
B.S. in E.E. 1952, Drexel Institute of Technology

Fite, Thomas Campbell — Md.
B.S. 1924, North Carolina State Teachers College

Fitts, Norman Chester — D.C.
A.B. 1950, Amherst College
LL.B. 1958, Harvard University

Fletcher, Alfred Chester, Jr. — Va.
B.S. 1950, Wilson Teachers College
LL.B. 1955, The George Washington University

Fleming, Maurice Carl — Pa.
A.B. 1934, Western Maryland College
A.M. 1938, Ed.D. 1952, Columbia University
Ph.D. 1956, New York University

Fletcher, Clarence Wallace — Va.
A.B. 1950, College of Wooster

Flick, Robert Clarence — Va.
A.B. 1954, Pennsylvania State University

Flinn, Basile H., Jr. — Pa.

Flocken, Paul Jay — N.J.
A.B. 1951, Lebanon Valley College

Flood, James Joseph, Jr. — Ohio
A.B. 1948, Notre Dame College

Flores, Rodolfo Alfred — Mo.
B.S. 1954, University of Toledo

Flynn, George Joseph, Jr. — D.C.
B.M. 1949, University of Minnesota

Fochtmann, Robert Carl — Md.
A.B. 1952, The George Washington University

Font, Jose Antonio Puerto Rico
A.B. 1954, University of Maryland
Fraley, Charles Lee Va
B.S. 1950, Concord College
Frame, Hermann D.C.
B.C.E. 1950, College of the City of New York
Foster, William George Pa
B.S. 1948, Drexel Institute of Technology
Fowler, Katherine Swann D.C.
A.B. 1952, The George Washington University
M.Mus. 1958, Catholic University of America
Fox, Saul Aaron N.Y.
Fox, Allan Bernard Md
A.B. 1941, University of Maryland
Frame, Clyde Douglas Md
A.B. 1950, Washington Missionary College
Francis, Alfred Carl Va
A.B. 1942, University of Virginia
LL.B. 1950, The George Washington University
Frazer, Ray Donald Md
B.S. in Ch.E. 1950, University of Idaho
Freeman, Evans Melvin Mass
B.S. in E.E. 1954, Northeastern University
Freeman, Charles Hilldrup Va
A.B. 1954, Virginia Union University
Freeman, Jack Mercer N.C.
B.S. 1950, Florida Southern College
Freeman, James Hampton, Jr. Md.
A.B. 1950, West Virginia University
Freund, Steven D.C.
A.B. 1950, Harvard College
LL.B. 1953, George Washington University
LL.M. 1954, Catholic University of America
Friedman, Abraham Philip La.
A.B. 1941, Tulane University
Friedman, Abraham Bruce N.J.
B.S. 1942, Florida State College for Women
Friedman, Julius Maxwell D.C.
B.S. 1950, University of Maryland
Fuqua, Jesse Alexander Texas
A.B. 1951, Southern Methodist University
Furr, Preston Lee Va.
M.A. 1951, Marshall College
Fusco, William Emerson Ohio
B.C.E. 1950, Villanova College
Fuss, Walter Lafayette Md.
A.B. 1950, Lafayette College

Fuste, Raul Puerto Rico
A.B. 1950, University of Puerto Rico

G

Gaines, Francis Xavier, Jr. Md
A.B. 1950, The George Washington University
Gallagher, Marion Mass
A.B. 1941, Wheaton College
M.A. 1943, Boston University
LL.B. 1948, Suffolk University
Gallagher, Robert William Ohio
A.B. 1950, Xavier University
Gallahan, Robert Wilson Va
A.B. 1950, University of Virginia

Gamble, James Howard Va
A.B. 1948, University of New Mexico
Gammill, Anthony William Md
B.S. 1950, University of Maryland
Gardner, Eugene Louis D.C.
B.S. 1950, University of Wisconsin
LL.B. 1953, The George Washington University
Gardner, Edith Rose D.C.
A.B. 1942, University of California at Los Angeles
LL.B. 1946, LL.M. 1950, The George Washington University
Gardner, Marshall Conway Md
B.S. 1950, M.S. 1951, The George Washington University
J.D. 1955, The George Washington University
Garner, Charles Louis N.H.
B.S. in E.E. 1947, University of New Hampshire
J.D. 1955, The George Washington University
Garrett, Paul Weather's Va
A.B. 1950, LL.B. 1956, The George Washington University
Garrett, Thomas Nelson S.C.
A.B. 1948, LL.B. 1949, University of South Carolina
LL.M. 1956, The George Washington University
Gass, Edmund Cobb Texas
A.B. 1951, Centenary College
A.M. 1951, University of Tennessee
Gasser, Rosemary Clare Idaho
A.B. 1941, St. Mary's College of California
Gasson, James Kenneth Ind.
B.S. 1948, J.D. 1950, Indiana University
LL.M. 1951, The George Washington University
Gawthrop, Elizabeth Williams D.C.
A.B. 1949, LL.B. 1951, Cornell University
Gayle, Irving N.Y.
B.S. & M.E. 1950, University of Idaho
Georgacas, Nicholas Chris D.C.
A.B. 1950, The George Washington University
Gessner, James Alan Ill.
B.S. in Ch.E. 1953, Northwestern University
Gewirz, Virgil Lee Va.
B.S. in E.E. 1948, University of California
Gibbs, Lloyd M. Utah
B.S. 1951, Brigham Young University
Giannella, Raoul Va.
A.B. 1950, Lawrence Rockport
LL.B. 1953, University of Michigan
LL.D. 1956, Ph.D. 1961, University of Paris
Gibson, Stanley Osmond D.C.
Gilbert, Armistead Williams, Jr. D.C.
A.B. 1949, University of Virginia
Gilliam, Cecelia Lewis N.C.
A.B. 1949, A.M. 1950, University of North Carolina

Gingery, C. Arden — Calif.
A.B. 1928, University of California at Los Angeles
LL.B. 1931, University of Southern California
LL.M. 1933, Georgetown University

Ginn, Iola Allen — Md.
B.S. 1951, University of Maryland

Ginnie, Tom Williams — Wash
A.B. 1954, The George Washington University

Glassman, Gerald John — Md
A.B. 1950, The George Washington University

Glenn, Ralph Ray — N.C.
A.B. 1947, University of North Carolina

Glickert, Peter — D.C.
B.S. in Ed. 1949, Fordham University

Glynn, Paul Joseph — Va.
A.B. 1948, College of St. Thomas
B.S.L. 1951, University of Minnesota
LL.B. 1951, National University

Gobetz, Harvey — N.Y.
A.B. 1954, Harpur College

Gold, Irwin Lester — Md
B.S. 1943, University of Maryland

Goldberg, Edna Parker — D.C.
A.B. 1923, University of Arizona

Goldberg, Ronald Sanford — D.C.
B.B. 1954, University of Maryland

Goldenberg, Morris Archer — Md
A.B. 1950, B.S. in E.E. 1952, Pennsylvania State University

Goulding, Harold Frederick — D.C.
B.S. 1937, University of Richmond
LL.B. 1948, The George Washington University

Gourmont, Sanford Morrison — D.C.
B.S.E. 1951, Ohio State University

Grant, George Marion — Fla.
A.B. 1951, Emory University

Grayfield, Ellis Lee — Colo
A.B. 1954, University of Denver

Greenstone, Melvin Gerald — Ohio
LL.B. 1947, University of North Carolina

Gresham, Thomas Hardman — Va.
A.M. 1938, Clemson University
LL.B. 1948, The George Washington University

Gresham, William James — D.C.
LL.B. 1891, Baylor University

Gretzer, Homer Jr. — Pa.
A.B. 1949, Upper University of Iowa
LL.B. 1949, The George Washington University

Gruber, Albert — Va.
B.M.S. 1944, College of the City of New York

Gullatt, Hugh Lee — Va.
B.S. in E.E. 1951, University of Maryland

Gunn, John Williams — Va.
A.B. 1949, Richmond College
A.M. in Ed. 1950, The George Washington University

Gustafson, William Paul — Calif.
A.B. 1949, Iowa State Teachers College
A.M. 1951, University of Southern California
Ph.D. 1954, University of Denver

Gosburn, Elmer Ellsworth — Ill.
B.S. in M.E. 1955, Northwestern University

Gosler, Eugene George — Minn.
A.B. 1948, A.M. 1951, American International College

Granath, Marvin Oliver — Minn.
A.B. 1952, Gustavus Adolphus College
LL.B. 1954, University of Minnesota

Grant, William Arthur — N.Y.
B.S. 1948, University of Pennsylvania
A.M. 1949, Columbia University

Grass, Joseph John — Ill
B.S. in M.E. 1954, University of Illinois

Gray, Charles Helman — Calif.
A.B. 1943, M.D. 1947, Stanford University

Greaves, Thomas Francis — Va
A.B. 1951, Occidental College

Greene, Morton Davis — Va
B.F.E. 1950, Georgia Institute of Technology

Greenhalgh, Frederic T. — D.C
A.B. 1950, Harvard University
A.M. 1954, The George Washington University

Greenspun, Irving Leonard — Va
B.S. 1951, University of North Carolina

Griffin, Benjamin Franklin — Va
B.E.E. 1914, University of Virginia

Griffin, William Israel — Va
A.B. in Govt. 1951, The George Washington University

Griffith, Cook Lamont — Mass.
B.S. 1939, LL.B. 1941, Boston University
LL.M. 1951, The George Washington University

Grimes, William Pennington — Md
A.B. 1951, St. Johns College

Grissom, Eugene Jesse — D.C.
B.S.L. 1948, LL.B. 1950, University of Minnesota

Grogan, Phyllis Pearl — Va
B.S. 1948, Marquette University

Grossman, Philip — Ind.
B.S. 1947, New York University

Grove, Edward Conner — Ind.
B.S. 1949, M.S. 1951, Purdue University
Dr. de l'Univ. 1953, University of Lyon, France
LL.B. 1954, LL.M. 1955, The George Washington University

Gross, Theron M. — D.C.
B.S. 1940, U.S. Military Academy
LL.B. 1947, Yale University

Guernsey, Thomas Keeler — Va
A.B. in Govt. 1951, The George Washington University

Gueriere, Lance Thomas — Iowa
A.B. 1951, M.C. 1953, Pennsylvania State University

Guyer, John Washington Jr. — Iowa
A.B. 1954, State University of Iowa

H

Hagerman, Mildred Mercier — Mich.
B.S. 1950, University of Michigan — D.C.

Haggard, Ronald H.

Hale, Harvey Robert
A.B. 1927, State University of Iowa — N.Y.

Hall, Almer Ira
B.S. 1928, University of Wisconsin — D.C.

Hall, Brian Parks
A.B. 1932, University of Maryland — Md.

Hall, James Ray
B.S. 1926, West Virginia University — W.Va.

Hall, Leroy Vandevelde
A.B. 1928, Morningside College — D.C.

Hallam, Charles White
A.B. 1931, Williams College — Ind.

Hamilton, James Andrew
A.B. 1931, Morningside College — Va.
LL.B. 1948, The George Washington University

Hamilton, James Erskine, Jr.
A.B. 1931, College of the Holy Cross — D.C.

Hammond, Hansen Vernon
A.B. 1929, University of Utah — Utah

Hanger, William Jewell
B.M.E. 1932, The George Washington University — Va.

Hannan, Peter Paul
A.B. 1934, Georgetown University — N.M.

Hanner, Edward Hanner
B.S. 1930, University of South Carolina — Va.
LL.B. 1934, National University

Harris, Richard Wayman
B.S. in E.E. 1924, Purdue University — Va.

Harrison, Earle Harrison, Jr.
A.B. 1930, Washington University — Va.

Harrison, Ewell Lee
LL.B. 1938, National University — D.C.

Harrison, Fred en Jesse
A.B. 1932, Hanover University — Ohio

Hart, Edward Rodney, Jr.
B.S. 1928, University of Rhode Island — R.I.

Hart, Hugh Alan
A.B. 1931, Randolph-Macon College — Va.

Hartman, George Kinder
B.S. 1924, Virginia Mechanic Institute — D.C.

Hartman, Lawrence Lewis, Jr.
A.B. 1934, University of Delaware — Del.

Hartman, Milton
B.B.A. 1934, College of the City of New York — N.Y.

Harvey, Moses Hoge, Jr.
A.B. 1934, The George Washington University — D.C.

Harwood, Katherine Tanner
B.S. 1928, University of Maryland — D.C.

Hatcher, Edwin A.
B.S. 1929, LL.B. 1940, Dickinson College — Va.

Hatfield, Paul
A.B. 1931, The George Washington University

Hayes, Benjamin Edward
B.S. in M.E. 1931, Virginia Polytechnic Institute — Va.

Hayes, Thomas Chapman, Jr.
A.B. Virginia

Hayes, [illegible]
B.S. [illegible], University of Hawaii — Mont. Hawaii

Hayes, [illegible]
B.S. [illegible], University of Connecticut — Conn.

Hayes, Richard Lawson
A.B. 1931, University of Maryland — Va.

Hayes, Richard Lawson
A.B. 1931, University of Maryland — Md.

Hayes, [illegible]
B.S. 1930, University of Louisville — Md.

Heatherington, James Rodes, Jr.
A.B. 1934, College of William and Mary — Va.

Heaton, William Edmund
B.S. in M.E. 1941, Purdue University — Ind.

Heckert, John Palmer
A.B. 1931, West Virginia University
LL.B. 1948, The George Washington University — W.Va.

Hedberg, Stanley Lorraine Bernard
A.B. 1940, A.M. 1941, University of Denver — D.C.

Hedrick, Benjamin Sherwood
Hedrick, Berry Moore
A.B. in Govt. 1930, LL.B. 1931, The George Washington University — Va. Va.

Heeter, William Nesbit
Hegle, William Edson
B.S. 1940, Georgetown University — Calif. D.C.

Heilenbeyer, Peter Alexander
Degree of Law 1940, University of Munich
M.C.L. 1946, The George Washington University — Md.

Heiskell, Frederick Carl
B.S. 1940, St. Joseph's College
LL.B. 1949, Cornell University — D.C.

Heim, John Edward
A.B. 1935, University of Minnesota
LL.B. 1937, University of Maine — Minn.

Helgate, Lowell Lash
B.S. in Ens. 1944, Case Institute of Technology — Va.

Helmuth, Emerald Clement
B.S. 1945, U.S. Military Academy
J.D. 1951, University of Chicago — Va.

Henderson, Theodore Hunter
B.S. 1943, West Virginia State College — W.Va.

Henshaw, Edmund Lee, Jr.
B.S. 1944, University of Maryland — Va.

Herbert, Frank Eve
A.B. 1943, Mt. Union College — Ohio

Herbert, John Ewald
A.B. 1942, Princeton University — Ohio

Herbert, Thomas Ulmer
B.E.E. 1941, Catholic University of America — D.C.

Herlihy, Geraldine Chandler
A.B. 1939, Lander College
B.S. in Edu. 1954, University of North Carolina — S.C.

Herman, Alvin Udolf
A.B. 1950, Randolph-Macon College — Va.

Hertz, Harvey Emerson
B.S. in E.E. 1951, University of Colorado — Colo.

Herzstein, Rodney Owen
A.B. 1943, LL.B. 1944, Washington University — Mo.

Hightower, Clifton Talbot, Jr.
B.S. in C.E. 1943, Mississippi College of Mining and Technology — Miss.

Hilgard, Richard
A.B. 1931, LL.B. 1932, LL.M. 1938, The George Washington University — Va.

Hill, Henry Redford
A.B. 1948, The George Washington University — Va.

Hill, Warren Dana
B.S. 1951, Ohio State University — Ohio

Hilton, Yoel Moss
B.S.A. 1948, A.B. 1949, University of Georgia — Va.

Hiller, William Eugene — Va
B.S. 1940, Tulane University

Hillman, Arthur Jerry — Wis
B.S. 1950, LL.B. 1955, University of Wisconsin

Hinckle, John Lamont — Ill.
B.S. 1954, U.S. Military Academy

Hiro, Nellie — Hawaii
A.B. 1950, University of Hawaii

Hirschhorn, Joseph Gregory — Va.
A.B. 1944, Georgetown University

Hobbs, Charles Allen — D.C.
A.B. 1950, Yale University

Hobson, Richard S.D. — Va.
A.B. 1951, Princeton University

Hocker, Richard Keller — Ariz.
A.B. 1953, University of Arizona

Hoes, Donald Allen — D.C.
B.S. 1954, University of Cincinnati

Hoffman, Paul — D.C.
A.B. 1950, Princeton University

Hogan, John Edward — Minn.
A.B. 1954, University of Minnesota

Hollingsworth, John Allen — Va.
A.B. 1951, University of Virginia
J.D. 1956, The George Washington University

Hoopman, John Edward, Jr. — Pa.
B.S. 1950, Pennsylvania State University
J.D. 1956, The George Washington University

Hooper, Arnold David — Md.
LL.B. 1953, National University

Hoopes, Charles Dallett — Md.
A.B. 1951, Haverford College

Hopkins, John Rose — D.C.
B.S. 1950, Virginia Military Institute

Hopperstad, David — Va.
A.B. 1948, Western Maryland College
J.D. 1957, LL.M. 1959, The George Washington University

Horan, Charles Patrick — D.C.
A.B. 1951, Fordham College
LL.B. 1953, The George Washington University

Howard, William Reed — Nebr.
A.B. 1951, LL.B. 1955, The George Washington University

Howden, Frederick Bradshaw — N.M.
A.E. 1939, University of New Mexico

Howerton, John Blackburn — Va.
B.E. 1949, University of Richmond

Hudson, William Paul — D.C.
B.S. 1951, Arizona State College

Hull, Marjorie Lee — Md.
A.B. 1947, A.M. 1950, University of California

Humphreys, Keith Irmland — Wyo.
B.S. 1951, Colorado Western University

Hunsaker, Jerrold Richard — D.C.
B.S. 1951, Florida State University

Hunsucker, Frederick Willis, Jr. — Va.
B.S. 1950, Wake Forest College
LL.B. 1953, The George Washington University

Hunsucker, Ronald Lee — Mo.
A.B. 1954, Central College, Mo.

Hunter, William Gilmore — Md.
A.B. 1950, Washington University
J.D. 1956, The George Washington University

Hyde, George Rickard — Idaho
B.A. 1952, Brigham Young University
LL.B. 1956, The George Washington University

Hyde, Herbert Kenneth, Jr. — Md.
A.B. 1953, University of Oklahoma

Hyde, Lorin Earl, Jr. — Utah
A.B. 1954, Brigham Young University

Hyde, Rosalind — Ill.
B.S. 1951, University of Maryland

I

Iovino, Charles Anthony — D.C.
A.B. 1954, The George Washington University

Ireton, George H. — Ill.
Dr. Jur. 1950, University of Zurich, Switzerland

Isaacharoff, Rhoda Sonn — Mass.
A.B. 1954, Cornell University

J

Jackson, Barry Wendell — Calif.
A.B. 1951, Harvard University

Jackson, Harold Lee — Calif.
B.S. 1949, California Institute of Technology
J.D. 1955, The George Washington University

Jackson, Nelson Parker — Va.
B.S. 1945, U.S. Military Academy

Jacobs, Stanley Herbert — D.C.
A.B. 1951, University of Maryland

Jacobsen, Richard Lee — N.H.
A.B. 1954, St. Anselm's College

Jaffee, Edward Lawrence — Ariz.
A.B. 1951, The George Washington University

Jaggi, Florence Rodgers — D.C.
A.B. 1940, Smith College

Jaques, Peter — Ohio
B.S. in B.A. 1955, Ohio State University

Jarmuth, Stephen Joseph — Va.
A.B. 1953, Duke University

Jaroslaw, Leonard Edmon — Ohio
A.B. 1948, Yale University
LL.B. 1951, The George Washington University

Jeanneau, William Wood — Conn.
B.S. 1954, Bridgeport Engineering Institute

Johannes, William Campbell — Va.
A.B. 1951, Davidson College

Johnson, Arthur — Md.
A.B. 1950, University of Alabama

Johnson, Charles Lloyd, Jr. — Mass.
B.E. in E.E. 1950, University of Maryland

Johnson, Donald Hamilton — N.J.
A.B. 1950, The George Washington University

Johnson, Edward Hall — Va.
A.B. 1950, Washington and Lee University

Johnson, Frederick Ross — Va.
A.B. 1950, University of Richmond

Johnson, Walter Alexander — Calif.
B.S. 1950, University of Southern California

Johnson, Washington, Captain — Md.
B.S. 1954, U.S. Military Academy

Jones, Charles Gilbert — Md.
B.S. in C.E. 1950, Duke University

Va

Texas

Va.

Va

Va

D.C.

W.Va

Md

Va.

D.C.

Va

W.Va

Va.

Md.

Mass.

Pa.

Kans.

Va

D.C.

Thailand

Va

Kans.

Va

D.C.

Va

N.Y.

D.C.

Mass.

D.C.

Va

Ky.

Va

D.C.

Ia.

Md.

Ia.

D.C.

Pa.

Va.

Va.

N.Y.

Calif.

D.C.

Mass.

Calif.

Pa.

Md.

Kipps, Warren Wallace
B.S. 1914, Missionary at Ewo

Kissane, Robert Martin
B.S. 1907, Georgetown University
LL.B. 1910, The George Washington University

Kitts, Oswald Eugene
A.B. 1911, Lieutenant Pulmotors, Navy

Kim, Hyung Hun
C.E. 1916, Seoul University
M.C.E. 1918, LL.M. 1918, The George Washington University

Kincheloe, Eugene Jolin
D.D. 1907, Christopher of Illinois
LL.B. 1914, LL.M. 1916, The George Washington University

Kiser, Elmira Frances
A.B. 1911, LL.B. 1916, The George Washington University

Kline, William Hannum
B.S. in E.E. 1910, University of Kentucky

Knoedler, Richard
B.S. in E.E. 1917, Government Engineer

Knowlton, Mitchell Tilton
A.B. 1918, The George Washington University

Knowlton, Howard Lawrence
A.B. 1911, LL.B. 1914, Dickinson College

Knowlton, Ward
B.S. 1916, Ohio State University

Koller, Raymond Adam
A.B. 1910, Lebanon Valley College

Kolne, Richard George
A.B. 1913, Harvard University

Klopp, Rodney Francis
A.B. 1915, Pennsylvania State College

Knoedler, Gustave Lionel, Jr.
B.S. in C.E. 1917, Purdue University

Knowles, Morris, Director Bur. Mines
A.B. 1901, The George Washington University

Knudsen, Oscar Nevell
B.S. in E.E. 1914, Iowa State College of Agriculture and Mechanic Arts

Koenig, Edgar
A.B. 1911, Hamilton College
LL.B. 1916, The George Washington University

Koepke, James Frederick
A.B. 1909, University of California at Los Angeles

Koerberer, Elvin
A.B. & Chem. 1914, LL.B. 1917, The George Washington University

Koerber, Kate Jeanette
B.S. 1913, University of Idaho

Koerber, Alexander
B.S. 1914, Dickinson of California at Los Angeles

Kohlhepp, Nathaniel Clemens
A.B. 1910, The George Washington University

Kolmer, Simeon Bellamy
A.B. 1911, Hampden Sydney
LL.B. 1914, The George Washington University

Kranich, Arvin Morris — Md
A.B. 1947, A.M. 1949, University of Denver
J.D. 1956, The George Washington University

Kriegsfeld, Thomas Edward — Mich.
B.S. in Eng. 1950, University of Michigan

Krimm, Paul Charles — Texas
B.Ch.E. 1948, University of Texas

Krupsk, Robert Hennessey — Mass.
A.B. 1949, University of Massachusetts

Krupp, Evan LeRoy — Idaho
A.B. 1950, LL.B. 1952, University of Utah
LL.M. 1954, The George Washington University

Krumm, Allen Joseph Jr. — D.C.
B.S. 1954, Wilson Teachers College

Kuch, Rubin Lewis — N.Y.
B.S. 1949, Brooklyn Polytechnic Institute

Kuhnmuench, Ted Dennis — Ohio
A.B. 1950, Princeton College

Kuntz, Mary Hamlin — W.Va.
A.B. 1948, West Virginia University
A.M. 1954, The George Washington University

Kurth, Donald Meredith — Md.
A.B. 1950, Dartmouth College

L

Ladimer, Irving — N.Y.
A.B. 1938, College of the City of New York
J.D. 1940, The George Washington University

Lafferty, Hayward George — Md.
B.S. 1951, University of Missouri

Lamm, John Edward — Md.
B.S. 1951, University of Maryland

Lamm, Sheldon Jay — Md.
B.S.S. 1950, College of the City of New York
A.M. 1951, Ph.D. 1954, Columbia University

Landrum, William Wayne — D.C.
Lansill, James Edward — N.Y.
B.Sc. 1950, Drexel College

Lanzner, Werner Joseph — La.
B.S. in M.E. 1950, Notre Dame University

Lauchheimer, Karl Ewald — Va.
A.B. 1950, A.M. 1952, University of Virginia

Laun, Karl Frederick — Iowa
A.B. 1950, Carleton College

Laun, Ronald Monroe — Ohio
B.S. 1949, Case Institute of Technology

Lavender, Henry Hinds — Va.
A.B. 1951, University of Georgia
LL.B. 1954, Harvard University

Lawson, Geoffrey T. — Va.
A.B. 1949, LL.B. 1952, Harvard University

Lazow, Jack — D.C.
A.B. 1948, Rensselaer Polytechnic
A.M. 1949, University of Maryland
LL.B. 1954, The George Washington University

Larson, Lynwood J. — Va.
A.B. 1948, Wheaton College, Ill. — Md.

Latimer, Lawrence Hobson — Va.
B.E.E. 1952, LL.B. 1955, The George Washington University

Lauch, Robert Conrad — D.C.
A.B. 1949, Municipal University of Wichita
LL.B. 1954, University of Kansas

Lawler, Edith Ivory — Mass.
A.B. 1944, The George Washington University

Leach, Charles Albert — Va.
B.S. 1939, Springfield College

Leary, John George — Md.
B.S. 1948, Assumption College

Leblanc, Joseph Richard — Hawaii
B.S. in M.E. 1948, University of Maine
LL.B. 1954, The George Washington University

Lee, David Hon Chun — Hawaii
A.B. 1953, University of Hawaii

Lee, John Franklin — Md.
A.B. 1950, Brigham Young University

Lefkowitz, Monroe Joseph — Calif.
B.S. 1951, College of the City of New York

Leland, Sherman Jr. — Ill.
A.B. 1954, University of California

Leonard, Edwin Dennis — N.Y.
A.B. 1950, Princeton College
LL.B. 1953, Harvard University

Lerner, Harry Robert — N.Y.
B.M.E. 1949, College of the City of New York

Leuzus, George Franklin — Md.
B.S. 1953, College of the City of New York

LeVeque, Victor R. — N.Y.
A.B. 1938, Penn State University

Levin, Howard P. — D.C.
A.B. 1948, LL.B. 1951, Cornell University

Levin, Sidney Frantz — D.C.
A.B. 1949, Duke University

Levin, Saul Woodbury — Va.
B.S. 1950, University of Virginia
LL.B. 1953, The George Washington University

Levine, Harold — N.Y.
B.Sc. in C.E. 1954, Purdue University

Levinson, Harold Bernard — D.C.
A.B. 1950, New York University

Lewis, Lawrence — Va.
B.S. 1952, Washington and Lee University

Lewis, Preston Ashby Jr. — W.Va.
B.S. 1951, Virginia Polytechnic Institute

Lieberman, Sidney Sam — W.Va.
B.S. in M.E. 1951, West Virginia University
LL.B. 1954, The George Washington University

Lieberman, Morris — N.Y.
B.S. 1949, College of the City of New York
LL.B. 1952, New York University

Liepold, Joseph — D.C.
Ph.Chem. 1954, Royal University of Naples

Lumbe, Louis George
A.B. 19[illegible], Marshall College
Md

Lusk, Carl Leslie, Jr.
A.B., B.S. 19[illegible], B.M. 1931, M.D. 19[illegible], University of Minnesota
Texas

Lustbader, Barbara Alice
A.B. 19[illegible], Sarah Lawrence College
N.Y.

Lyddane, Lawrence Albert
A.B. 19[illegible], Ohio Wesleyan University
Va

Lyons, Rae Stanton Bernard
LL.B. 19[illegible], St. John's University
Va

Lyons, Raymond David
A.B. [illegible], LL.B. 1932, New York
D.C.

Lyon, Lawrence Herbert
B.S. 19[illegible], Ohio State University
LL.B. 1945, The George Washington
Ohio

Lyons, Walter Ludwig
B.S. 1948, Towson College
M.B.A. 19[illegible], University of
Maryland
Md

Lyons, Norman, Jr.
B.S. 19[illegible], Pennsylvania State
College
D.C.

Lyttleton, John Fred, Jr.
A.B., B.A. 19[illegible], University of
Arkansas
Ark.

Lyons, Marie Flaherty
A.B. 19[illegible], Siena College
Iowa

Lyttleton, Alvin Raymond
B.S. 1940, U.S. Merchant Marine
Academy
Md

Lyons, Thomas Arthur
A.B. 19[illegible], Howard University
Ohio

Lyons, Leo, College of Wooster
D.C.

Lyon, Joseph Thomas
A.B. 19[illegible], Samford University
Va.

Lyons, Samuel Nathan Francis
Hawaii

Lyons, [illegible], University of Louisville
Md

LL.M. Law 1938, McKinley Tennille
Lyons, [illegible], The George Washington
University

Lyons, John Francis
A.B. [illegible], University of Maryland
Md

Lyons, [illegible]
A.B. [illegible], The George Washington
Va.

Lyons, [illegible]
Md

Lyons, [illegible], University of New
Hampshire

Lyons, [illegible]
Va

Lyons, [illegible], A.M. Iowa, University of
Md

Lyons, [illegible]
Va.

M

Mabrey, [illegible]
W. Va.

Macbeth, [illegible]
Md

Macbeth, David
A.B. 19[illegible], University of Vermont
Fla

Mack, Robert James
B.S. 19[illegible], Georgetown University
La

MacMannis, Elizabeth Anne
A.B. 1948, Hollins College
Va

Madden, Ramsay Paul
A.B. 1932, Swarthmore College
Va

Madhabhakdi, Kasem
LL.B. 1942, University of Thammasat,
Thailand
Thailand

Maharaj, Albert Abraham
B.S. 1951, Worcester Polytechnic
Institute
Mass

Mahon, Frank May
B.S. 1944, M.S. 1951, North Texas
State Teachers College
Texas

Main, George Henry
B.S. 1950, U.S. Merchant Marine
Academy
Md

Maisel, George Donald
B.S. 1944, University of Maryland
N.J.

Major, Eugene Mayer
A.B. 1951, University of Maryland
D.C.

Makens, Jack
A.B. in Journ. 1943, The George
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D.C.

Malloy, Clifford Fishburn, Jr.
A.B. 1952, Morris Harvey College
W.Va.

Malmstrom, Joseph Bowman
B.S. 1950, Loyola College
Va

Malloum, Joseph Patrick
Ph.B. 1954, University of Notre Dame
D.C.

Malone, Lee Polly
B.C.E. 1947, Rensselaer Polytechnic
Institute
Va

Malone, Henry Francis
B.S. 1954, Washington and Lee
University
Va

Maloney, Toby
LL.B. 1951, The George Washington
University
W.Va

Mammarella, William Casper
A.B. 19[illegible], University of Delaware
Del.

Mann, Lloyd Arnold
A.B. 1934, University of Kentucky
Ky.

Mann, William Allen
A.B. 1950, University of Texas
M.B.A. 1952, University of Kansas
Texas

Manuel, Rolando Abad
LL.B. 1950, Far Eastern University,
Philippines
Philippines

Manzer, William Ernest
A.B. 1954, University of New
Hampshire
N.H.

Marcil, Edward N.
A.B. 1951, Boston College
N.Y.

Marcinow, Joseph Andrew
A.B. 1951, Bradley Pinney University
Utah

Marchant, Mitchell S.
A.B. 1950, Hampden-Sydney College
LL.B. 1953, The George Washington
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Va.

Marcus, Grace Bedford, A.
A.B., A.M. 1951, University of
Maryland
Md

Marcum, Charles Austin, A.
A.B. 1951, The George Washington
University
Va.

Marcuse, Arthur Ulysses
LL.B. 1914, The George Washington
University
N.Y.

Mayr, George Alexander
A.B. 1934, University of Maryland — Md.

Mayse, David Monroe
A.B. 1914, Shepherd College — Md.
LL.B. 1915, The George Washington University

Mayse, Mary Rogers
A.B. 1934, A.M. 1935, The George Washington University — Va.

Mazza, Charles Edgar
B.S. 1934, U.S. Coast Guard Academy — Nebr.

Mazza, Edgar Thomas
B.S. 1948, M.S. 1950, Virginia Polytechnic Institute — Va.

Mazzi, Julius Noel
A.B. 1935, University of Maine — D.C.

Mazzoni, Robert Wilbur
A.B. 1950, Virginia Union University — Va.

Mazzuca, Ralph Louis
A.B. 1949, Ohio State University — Ohio

Mazzy, Robert Chester
B.S. 1934, University of Pennsylvania — Mass.

Mazzy, Roy Jerome
A.B. 1938, Marion City College — N.Y.

Mazzy, William Bedford
A.B. 1937, Fleetwood College — D.C.

Mcanaugh, James Edwin
B.S. 1951, Berea College — Ky.

Mccabe, Earle Joseph
B.E. in E.E. 1942, Villanova College — N.J.

McCahan, Edgar Stephen Hagner
B.S. 1941, Elon College — N.C.

McCahon, Alfred
A.B. 1937, University of Nevada — Nev.

Mccahon, Malcolm Gene
A.B. 1938, University of Nevada — Nev.

Mccain, Ronald Gerard
A.B. 1934, Providence College — Conn.

Mccall, Calvin Brown
A.B. 1938, A.M. 1939, University of Buffalo — D.C.

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A.B. in Govt. 1950, The George Washington University — Va.

Mccann, Helen D'Lesdie
B.S. 1931, New York University — D.C.

Mccann, Ronald Warner
B.S. in M.E. 1951, Kansas State College of Agriculture and Applied Science — Kans.

Mccardell, Edward Lyman
B.S. 1948, U.S. Naval Academy — Md.

Mccardwell, William L.
B.S. in Ed. 1951, Pennsylvania State Teachers College, East Stroudsburg — Pa.

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B.S. 1942, Lynchburg Navy University
LL.B. 1949, The George Washington University — Va.

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Mccabe, Robert Lee
B.S. 1941, St. Peter's College — N.J.

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A.B. 1915, University of Minnesota — D.C.

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A.B. 1940, Randolph-Macon Woman's College — Mass.
LL.B. 1943, The George Washington University

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A.B. 1951, Emerson College — Va.

McCardle, Mary Ethel
A.B. 1926, The George Washington University — Va.

McCarron, Robert Glen
B.S. 1934, University of Nebraska — Iowa

Mccarthy, William Bernard, Jr.
B.S. 1948, University of South Carolina — Nebr.
LL.B. 1950, The George Washington University

McDaniel, Marion K.
B.S. 1934, Purdue University — Ind.

McDaniel, Marion Floyd
A.B. 1933, Emory University — Ohio

McDonald, Marianne Theodore
A.B. 1951, University of North Carolina — Va.

Mcdonald, Ronald Parker, Jr.
A.B. 1951, University of Maryland — Md.

Mcdonnell, Justin Ford
B.S. 1933, Georgetown University — Va.

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A.B. 1937, LL.B. 1941, University of Alabama — Ala.

Mcewan, Robert Phillips
B.S. in C.E. 1950, Virginia Polytechnic Institute — Va.

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B.S. in Elec. 1951, Iowa State College of Agriculture and Mechanic Arts — Iowa

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B.S. 1941, U.S. Naval Academy
LL.B. 1950, University of Kansas — Mo.

Mcgehee, Thomas Thomas
B.M.E. 1948, Georgia Institute of Technology
LL.B. 1950, The George Washington University — Va.

Mcgowan, George Hagood
B.S. 1951, University of South Carolina — D.C.

Mcgregor, Wallace Hulley
A.B. 1951, University of Florida — S.C.

Mcgregor, William
M.S. 1951, East Tennessee State College — D.C.

Mcgue, Emerald Raleigh
B.S. 1948, Northwest Missouri State College — Md.

Mcgue, Irvin G.
B.B.A. 1951, LL.B. 1955, University of Maryland — Mo.

Mcgushin, Douglas Robert
B.M.E. 1949, Rensselaer Polytechnic Institute — Mo.

Mcgowan, James Joseph
B.S. 1950, Fordham University — N.Y.

Mcguigan, Richard Vaughan
A.B. 1948, The George Washington University — Iowa

Mcneill, Lindsay Elliott
B.S. 1950, University of North Carolina — N.C.

Mcnulty, Harold Eugene
A.B. 1950, A.M. 1951, University of Michigan — Mass.

Mcnutt, Paul Edmund
A.B. 1951, The George Washington University — Va.

Mcwhorter, John Alexander, Jr.
A.B. 1947, LL.B. 1950, Washington and Lee University — D.C.

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B.S. 1944, Brigham Young University — Md.

Mayle, Irving Weldon
A.B. 1928, Concord College — Ill.

Meador, Rainey Forrester
A.B. 1922, University of Michigan — Mich.
LL.B. 1926, The George Washington University

Means, Edward Douglas, Jr.
A.B. 1929, Duke University — D.C.

Meares, Leonidas Ralph
B.S. 1921, University of Utah — Md.

Mercer, Pearl Lee
LL.B. 1929, Montana State University — Va.

Meyer, Jack Monmouth
B.S. 1924, Montana State College

Meyer, [illegible]
B.S. 1928, Clarkson College of Technology — Va

Meyer, [illegible]
LL.B. 1928, The George Washington University

Meyer, Charles Edward
B.S. in F.S. 1922, Georgetown University — Fla.

Meyer, Gordon Russell
B.S. in F.S. 1922, University of [illegible] — Md.

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LL.B. 1928, The George Washington University

Meyerson, Fernando, Jr.
B.S. 1922, Georgetown University — Spain

Michie, Edward Lee
B.S. 1922, University of Colorado — Colo.

Middleton, Charles Alan
A.B. 1924, University of Oklahoma — Okla.

Middleton, Quincy LeRoy
B.S. 1926, Department Mines and Mining — Va.

Miles, [illegible]
A.B. 1924, Florida University — D.C.

Miles, Vaux Woodward
A.B. 1926, The George Washington — Mass.

Miller, Elmer Perley
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Miller, Richard Manton
B.S. in F.S. 1922, Milwaukee School of [illegible] — Ill.

Miller, [illegible]
LL.B. 1928, The George Washington

Miller, Harold Hugh
A.B. 1924, The George Washington — Md.

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A.B. 1926, [illegible] — Minn.

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LL.B. 1928, The George Washington

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B.S. in F.S. 1922, New York University — Fla.

Miller, [illegible]
LL.B. 1928, The George Washington — D.C.

Miller, [illegible]
A.B. 1926, [illegible] — D.C.

Miller, [illegible]
LL.B. 1928, The George Washington

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B.S. in F.S. 1922, Georgetown — D.C.

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LL.B. 1928, The George Washington — Wis.

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B.S. in F.S. 1922, West Virginia University — Va.

Miller, Sydney — N.Y.
B.B.A. 1924, College of the City of New York

Miller, Walter Clarence — Pa.
A.B. 1925, Pennsylvania State University

Miller, William Charles — Md.
A.B. 1923, University of Maryland

Mitchell, John Rowe — N.C.
A.B. 1922, University of North Carolina

Mitty, Bonnie — Miss.
LL.B. 1926, University of Mississippi

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B.A.E. 1923, Rutgers University

Mooberry, Miles Gail — Ill.
B.S. 1918, M.S. 1920, University of Michigan

Mitchell, Jerry Warren — Wash.
B.S. 1921, U.S. Merchant Marine Academy

Mooney, Robert Idle — D.C.
B.S. 1926, Benjamin Franklin University

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B.S. in M.E. 1926, Florida Institute of Technology

Mosconi, Edwin John — Md.
A.B. 1924, Loyola College

Cole, [illegible] — Calif.
LL.B. 1926, The George Washington University

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B.S. 1922, University of California
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LL.M. 1926, The George Washington University

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B.S. 1922, University of Missouri

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A.B. 1921, Wofford

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A.B. 1922, St. Mary's College

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A.B. 1924, College of the Holy Cross

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B.S. 1921, West Virginia University

Mullenix, Patrick James — D.C.
A.B. 1920, American International College
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B.S. 1922, University of New Hampshire

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A.B. 1922, University of Louisville

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B.S. 1950, St. Joseph's College

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Nassar, Theodore N.Y.
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Ph.D. 1955, Fordham University
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B.A. 1949, University of Utah
Nelson, Edward Hilton D.C.
B.E. 1938, University of North Carolina
Newman, Clarence Irwin D.C.
A.B. 1947, Pennsylvania State University
Newcomb, Jack Henry Md.
A.B. 1938, Ohio State University
Newman, James Dallas Md.
A.B. 1940, Hamilton College
Nichols, L. Ewin III Ill.
B.S. 1949, University of Illinois
Nicholson, Edward Bryant, Jr. Va.
A.B. 1949, Augustana College
M.D. 1953, Columbia University
Nichols, Ruth Allene Md.
B.S. 1948, West Virginia University
LL.B. 1950, Wayne University

Niles, Theodore Lyman N.Y.
A.B. 1941, Yale University
A.M. 1947, Columbia University
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A.B. 1941, University of Michigan Fla.
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B.S., M.S. 1942, Georgetown University Va.
O'Quin, Rodney Lamar
B.S. 1938, University of Tennessee Md.
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A.B. 1926, Brown University
M.D. 1930, Harvard University Ky.
Oldham, James Simpson
A.B. 1950, Centre College Conn.
Otero, George Robert
A.B. 1950, University of Indianapolis Va.
A.M. 1954, New York University
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B.S. in B.A. 1951, Madison College D.C.
O'Reilly, Henry Thomas
B.S. 1951, Georgetown University Mich.
O'Toole, Donald Edmund
B.S. 1954, Loyola University Md.
Ottenstein, Thomas Raf
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LL.B. 1954, Georgetown University D.C.
Overton, Millard Frederick, Jr.
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B.S. 1943, University of Illinois
Parsons, Edward Anthony Md.
A.B. 1950, University of Maryland
Palau, Arnaldo D.C.
B.S. 1954, University of Maryland
Palladino, Mary Ann
A.B. 1950, Lebanon Valley College
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Bu, Mary Chi
A.B. 1940, National Chengchi
Fleming, George John
A.B. 1[illegible], George Washington University
Fuller, George
A.B. 1[illegible], The George Washington University
Ingraham, John Nicholas
A.B. 1[illegible], University of Delaware
Lewis, James Rawson
A.B. and Dentistry 1942, University of
Pappas, Stephen
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A.B. 1[illegible], Duke University
Sanford, Terry
A.B. 1[illegible], Wake Forest College
Sapero, Julius Lewis
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Sarbanes, Paul Spyros
A.B. 1[illegible], The George Washington
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China
Mass.
N.J.
Pa.
Spain
Wis.
Va.
Mass.
N.Y.
Oreg.
Pa.
Pa.
Pa.
Pa.
Md.
Md.
Okla.
Va.
Pa.
Va.
Iowa
Ga.
N.H.
Nev.
Va.
Md.
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Ark.
Vt.
Okla.
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Va.
N.Y.
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N.Y.
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A.B. 1948, LL.B. 1951, University of Michigan

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B.S. 1944, U.S. Coast Guard Academy
J.D. 1958, The George Washington University

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Diploma de Licenta in Drept 1937, Diploma de Licenta 1941, University of Bucharest, Romania
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A.B. 1934, Newark University

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A.B. 1952, University of Washington

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A.B. 1941, Franklin and Marshall College

Reasoner, Darrell George — Utah
B.S. 1953, University of Utah

Rice, MacDonald — Va.
B.S. 1951, Virginia Polytechnic Institute

Richards, Hoxie LeRoy — Va.
B.S. 1950, Eastern Illinois State College
E.I.M. 1953, LL.B. 1956, University of Florida

Richards, Julian Imbrie, Jr. — Va.
B.S. 1953, University of Maryland

Richards, Seymour — Virginia
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A.B. 1951, Western State College of Colorado
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Richmond, Richard Marvin — W.Va.
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Ritchie, Frederick Heath — N.Y.
B.S. 1923, University of Pennsylvania

Ritchie, Spencer Forrest — Wash.
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Ritchey, Elsie Dale — Ill.
B.S. 1954, University of Illinois

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B.S. in M.E. 1954, Purdue University

Rittenour, Jack Ball — Ariz.
B.S. 1949, Bowling Green University
J.D. 1955, The George Washington University

Roberts, James Richardson — S.C.
B.S. 1950, College of Charleston
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Robertson, Charles Augustus — Va.
B.L.E. 1950, University of Virginia

Robinson, Peter Arthur Ian — Maine
Robinson, Roscoe Simon — Mass.
A.B. 1956, American University

Rockwell, Marion Arden — Pa.
B.S. 1947, M.Litt. 1950, University of Pittsburgh

Rogers, John Tracy — Md.
B.S. 1949, University of Colorado

Rogers, John Tyler — D.C.
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Rogers, Kenneth Norman Jr. — N.Y.
B.S. 1951, Ohio State University

Rogers, Michael Edward — D.C.
B.S. 1948, Columbia University

Rohrbaugh, John Charles — Ohio
LL.B. 1949, University of Michigan

Rolson, Jimmie Dale — Mo.
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A.B. 1954, Cornell University

Rossi, Marvin H. — D.C.
B.S. 1951, Pennsylvania State Teachers College

Rossi, Ruth — D.C.
B.S. in Phar. 1950, The George Washington University

Rosenberg, Herman Louis — D.C.
A.B. 1948, The George Washington University

Rosenfeld, Thomas Haven — R.I.
A.B. 1950, Providence College

Rosenman, Edna — N.Y.
A.B. 1945, Brooklyn College
A.M. 1948, New York University
J.D. 1953, The George Washington University

Rosenthal, Robert J. — N.Y.
A.B. 1947, University of North Carolina
A.M. 1947, American University

Ross, Bessie Kennedy — Mont.
B.S. 1942, Montana State University

Ross, Ivey — D.C.
B.M.E. 1956, Northeastern University
LL.B. 1956, The George Washington University

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B.S. in A.E. 1951, Lafayette College

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A.B. 1951, A.M. 1954, The George Washington University

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A.B. 1924, A.M. 1926, B.S. in L.S. 1928, Columbia University
LL.B. 1949, The George Washington University

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B.S. in M.E., 1962, Case Institute of Technology — Ohio

Rotnem, Victor Franklin
B.S. in M.E., 1949, University of Maryland — Md.
J.D., 1956, The George Washington University

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B.S., 1950, Yale University — Mo.

Rowley, David
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Rozier, Robert Lee
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Ruane, James Miller
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Ruane, John Boone
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Ryan, Thomas Joseph
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Ryder, Thomas Arrington
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Ryerson, Raymond Gilbert
B.E.E., 1948, Purdue University — D.C.

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A.B., 1948, Indiana University — Ind.
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LL.M., 1951, The George Washington University

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Sachse, Karl Julius
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Sachtjen, Warren Andrew
A.B., 1950, University of Minnesota — Wis.

Sachtleben, Roy Fred
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Schaum, Eric Paul
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A.B., 1948, The George Washington University — D.C.

Schwartz, Philip
A.B., 1950, The George Washington University — N.Y.

Schwartzman, Hiram George
A.B., 1948, Tulane College
LL.B., 1951, The George Washington University — Va.

Scott, Kenneth John
A.B., 1951, Howard University — D.C.

Scott, Lawrence Fairfax
B.S., 1950, Syracuse University
LL.B., 1956, The George Washington University — Md.

Scott, Thomas Clarke
A.B., 1948, Barnard College
LL.B., 1951, Columbia University — N.Y.

Scott, Jesse William
A.B., 1951, Howard University — Md.

Seager, Hobson Howard
A.B., 1951, A.M., 1952, Johns Hopkins University — Md.

Searl, Byron Austin
A.B., in Taxn., 1954, The George Washington University — D.C.

Sedgwick, Harvey Lollis
B.S., 1951, University of Maryland — Md.

Seemann, Edward A.
A.B., 1950, The George Washington University — Va.

Segre, Milton Ezra
Master, Juris, 1952, University of Denver — D.C.

Servando Cesar Concha — Philippines
LL. B. 1954, University of the Philippines

Seve, John Michael — Oreg.
A.B. 1939, Pacific University
LL.B. 1942, Northwestern College of Law

Sewell, Norman Lewis — W.Va.
A.B. 1954, Morris Harvey College

Shafer, Hugh Madison, Jr. — Va.
A.B. 1951, University of Maryland
J.D. 1953, The George Washington University

Shanda, Lee Edwin — Va.
A.B. 1950, Washburn Municipal University of Topeka

Sharon, Francis Shelton — Md.
A.B. 1942, Randolph College

Sharon, John Hurford — N.J.
A.B. 1949, Princeton University

Shattuck, William Pitt — Ill.
A.B. 1946, Elmhurst College
J.D. 1949, Northwestern University

Shaw, Roger Neil — Md.
A.B. 1954, Catholic University of America

Shelble, John Howard III — Va.
A.B. 1952, Williams College

Shermeyer, Edward Lawrence — Ill.
A.B. 1948, A.M. 1951, Roosevelt College

Sherry, Vincent Jerome — Ky.
A.B. 1951, Western Kentucky State Teachers College

Shewmake, James Ross — Va.
A.B. 1937, LL.B. 1951, The George Washington University

Shimabukuro, Herbert Kenji — Hawaii
A.B. 1951, University of Hawaii

Shipman, Percival Edward, Jr. — Va.
B.S. 1948, College of the Holy Cross

Shoemaker, Daniel — Pa.
B.S. in E.E. 1951, Pennsylvania State Teachers College, Mansfield

Short, Robert Lee — Md.
B.S. 1954, The George Washington University

Shuman, John Louis — Va.
B.S. 1940, Cornell University

Sibson, Robert Francis — Mont.
A.B. 1951, University of Virginia

Simmons, Arthur Thelma Lee — Texas
B.S. 1949, University of Illinois
M.S. 1950, Southern University

Simpson, William Reuben III — Md.
A.B. 1952, University of Maryland

Sims, Reuben, Jr. — Va.
B.S. 1951, East Tennessee State College

Sisson, Lisa — D.C.
Bachelor of Laws 1947, University of Southern [illegible]
Doctor of Law 1947, University of [illegible]
M.L. [illegible], The George Washington University

Sisk, Murray Thomas, Jr. — Md.
B.A. 1951, University of Maryland

Sisk, Thomas [illegible] — Md.
A.B. 1954, University of Maryland

Skeen, Robert S. — Idaho
B.S. 1951, University of Agricultural College

Skellenger, David — [illegible]
A.B. 1951, University of Washington

Skovran, Nicholas — [illegible]
B.S. 1950, M.S. 1952, Pennsylvania State University

Slattery, Dan Joseph — Kans.
A.B. 1954, University of Maryland

Sloat, Jonathan Wyatt — D.C.
A.B. 1950, Yale University

Smeraldi, Angelo John — Conn.
A.B. 1949, Indiana University
LL.B. 1952, The George Washington University

Smith, Daniel Joseph — Va.
B.S. in Ch.E. 1950, Bucknell University

Smith, Donald Kane — Md.
A.B. 1954, University of Maryland

Smith, Donald Martin — Md.
A.B. 1952, Western Maryland College

Smith, Glenn Alvin — Ohio
A.B. 1946, Central State College, Ohio.

Smith, James Cooper, Jr. — Md.
A.B. 1952, University of Maryland

Smith, James Donald — Md.
A.B. 1947, Municipal University of Omaha
A.M. 1954, Western Reserve University

Smith, James Hale — S.D.
B.S. 1954, South Dakota School of Mines and Technology

Smith, James Joseph — Md.
B.S. 1949, Loyola College

Smith, Jennings Talbot — D.C.
A.B. 1939, LL.B. 1954, The George Washington University

Smith, John Francis — Va.
LL.B. 1951, Marshall University

Smith, Milton Frank — [illegible]
A.B. 1947, A.M. 1951, University of [illegible]

Smith, Mildred Lorraine — Iowa
A.B. 1949, Simpson College

Smith, Noel Lyman — Md.
B.S. 1951, United States Coast Guard Academy
M.S. in Aeronautical Engineering, 1954, University of Michigan

Smith, Patrick Emmett, Jr. — Tex.
A.B. 1951, Yale University

Smith, Samuel Marsh — Md.
A.B. 1955, The George Washington University

Smith, Thomas Eugene — [illegible]
B.S. in Met. Eng. 1950, Missouri School of Mines and Metallurgy
J.D. 1956, The George Washington University

Smith, William Augustus III — Va.
B.M.E. 1950, Catholic University of America

Snyder, Edward Wallace — Md.
A.B. 1949, Physician

Snyder, Edward Jarvis — Alaska
A.B. 1954, Catholic University of America

Solomon, Charles Silverton — D.C.
A.B. 1950, Highlands University

Sorensen, Mason Winston — Va.
A.B. in Chem. 1951, The George Washington University

Sorensen, William Frederick, Jr. — [illegible]
B.A. in M.E. 1950, Purdue University

N. Y.

Stanish, John Matthew III
B.S. in M.E. 1952, Pennsylvania State University — Pa.

N. Y.

Stegall, Harold Warren
A.B. 1950, St. Olaf College — Minn.
A.M. 1951, University of Wisconsin

Ohio

Stegman, Henry Ray, Jr.
A.B. 1951, University of Delaware — D.C.

Ga.

Stewart, Esther Baden
A.B. 1949, Virginia Military Institute — Texas
LL.B. 1949, University of Texas

Utah

Stewart, Warren
A.B. 1949, LL.B. 1952, The George Washington University — Md.

Md.

Stockham, Melvin, Jr.
A.B. 1954, The George Washington University — Iowa

D.C.

Stockman, Peter Albert
A.B. 1951, Bucknell College — D.C.

Md.

Stockton, Richard Clifton II
B.S. 1951, Virginia Military Institute — Mo.

Pa.

Stoever, Donald Bernard
B.S. 1954, University of Scranton — Pa.

Mich.

Suarez, Robert Manuel
A.B. 1950, University of Illinois — Puerto Rico

Md.

Swallow, Sydney Chenery
B.S. 1952, Guilford College — Pa.

Va.

T

Ill.

Taller, Hans
A.B. 1949, The George Washington University — N. Y.

Md.

Tarro, Frank Fabio
A.B. 1950, University of Hawaii — Hawaii

Tarpley, Bernard Mahon
B.S. 1954, University of Texas — Utah

Md.

Taulbee, Wendell Bernard
A.B. 1954, Hanover College — Md.

Va.

Tawney, James Stanton
A.B. 1948, Southwestern State College of Louisiana — Va.

Md.

Taylor, Jesse Raymond III
LL.B. 1950, LL.M. 1956, The George Washington University — Texas

D.C.

Taylor, Norman Reiner
B.S. 1951, Shippensburg State College
A.B. 1952, LL.B. 1954, University of Virginia

N. Y.

Taylor, Norman Reiner
B.S. 1951, University of Maryland — D.C.

Va.

Taylor, William Gordon
B.S. 1950, University of Massachusetts — D.C.

Md.

Taylor, Winfield Scott
A.B. 1952, Yale University — Ohio

Idaho

Tedeschi, Giuseppe Paolo
B.S. 1950, Fordham University — D.C.

Va.

Tessner, Melvin Lee
A.B. 1948, A.M. 1950, New York University — Va.

Pa.

Thomas, John
B.M.E. 1954, University of Florida
LL.B. 1957, University of Pennsylvania — Pa.

Ia.

Thomas, Theodore Hutchinson
B.A. 1952, Ripon College — Idaho

S.C.

Thomas, Earl G.
A.B. 1951, Dartmouth College — D.C.

Mich.

Thompson, Francis Edwin, Jr.
LL.B. 1955, The George Washington University — Md.

Ohio

Thompson, Charles Wayne
A.B. 1951, College of Emporia — Kans.

Va.

Thompson, Edgar Allen
B.S. in C.E. 1948, Purdue University — Pa.

Thompson, Garland Pannell — D.C.
LL.B. 1956, The George Washington University

Thompson, William Jr. — Va.
A.B. 1953, Harvard University
J.D. 1956, The George Washington University

Thornburg, Joseph Carlyle — N.C.
B.S. 1951, University of North Carolina

Thrall, Irving Russell — Va.
A.B. 1952, Wabash College

Thurman, John N. — D.C.
B.S. 1946, U.S. Merchant Marine Academy
B.S. in F.S. 1949, Georgetown University
LL.B. 1958, National University

Tidd, Ira Thomas — Colo.
B.S. 1929, University of Nebraska
A.M. 1938, University of Denver

Tiemann, John Lester — Wis.
A.B. 1926, University of Minnesota
LL.B. 1928, University of Wisconsin
LL.M. 1956, The George Washington University

Tillson, Richard Norman — Mass.
A.B. 1950, Dartmouth College
A.M. 1954, Johns Hopkins University

Timberlake, Frederick Clyde — Va.
B.B.A. 1951, Westminster College
M.B.A. 1954, Ohio State University

Titus, Martin Ellsworth — D.C.
B.S. 1920, University of Pennsylvania

Toland, Jane Cowles — Mich.
A.B. 1954, University of Michigan

Tompkins, Hiram Marion — Va.
B.S. 1934, University of California at Los Angeles

Torres, Emilio — D.C.
B.S. 1935, National University
LL.B. 1937, University of the Philippines

Tourtellotte, George Bowers — Va.
A.B. 1937, A.M. 1940, University of Alabama

Towe, Jane — D.C.
B.S. 1950, University of Texas

Traynor, William Earnest — Va.
B.S. 1948, Georgetown University
LL.B. 1950, The George Washington University

Trigg, Turner Greene — Md.
B.S. 1941, New York University

Trow, Robert Augustus, Jr. — Md.
A.B. 1951, LL.B. 1954, The George Washington University

Tsang, Richard Dardin — Va.
B.S. 1954, University of New Hampshire

Tucker, Stevens Partington — Calif.
B.S. 1953, Stanford University

Tuel, Lyman Vernon — Ohio
B.S. 1948, Ohio University

Turner, Ann — D.C.
Law Diploma 1948, Tufts University, England

Turner, Mary Johnston — D.C.
A.B. 1954, The George Washington University

Turshen, Ethan Allen — N.Y.
A.B. 1950, Syracuse University
M.P.A. 1954, Syracuse University

U

Umstead, Walter Williams — N.C.
A.B. 1951, University of North Carolina

Unterholtz, Willard Clifton — Md.
B.M.E. 1948, College of the City of New York
M.S. 1955, Rensselaer Polytechnic Institute

V

Vakos, George William — Va.
A.B. 1954, College of William and Mary

Van Brunck, Ralph Raymond — Md.
A.B. 1941, Washington Missionary College

Van Gorden, John Hanford, Jr. — N.Y.
A.B. 1950, Syracuse University

Van Hise, Louise Masse — N.Y.
A.B. 1940, Hood College

Van Rensselaer, Guy Everett — Va.
A.B. 1937, A.M. 1951, The George Washington University

Vassel, John Charles — Ohio
B.S. in C.E. 1952, Carnegie Institute of Technology

Velez, David G. — Fla.
A.B. 1953, Polytechnic Institute of Puerto Rico

Velleman, Joseph — N.Y.
A.B. 1952, New Jersey State Teachers College, Montclair

Venable, Dorothy Caldwell — D.C.
A.B. 1941, University of North Carolina

Vennard, Daniel Bushnell, Jr. — D.C.
A.B. 1952, Ohio Wesleyan University

Vermillion, Florence Robert — Md.
B.S. 1941, University of Maryland

Via, John William, Jr. — Va.
B.S. 1951, A.M. 1953, University of Virginia

Villaard, Warren Lane — Md.
A.B. 1939, Harvard College

Vincenti, James Victor — N.J.
A.B. 1939, University of Wisconsin
Diploma 1951, École des Hautes Études Internationales, France

Vongvipanond, Ananta — Thailand
LL.M. 1952, University of Thammasat, Thailand

Vosylius, Joseph — D.C.
LL.B. 1950, University of Lithuania

W

Wade, Powell Gene — Utah
B.S. 1951, Brigham Young University

Wagner, Elijah Edward, Jr. — Md.
B.S. 1950, Johns Hopkins University

Walker, James Franklin — N.C.
B.S. 1949, Hampton Institute

Walker, Nancy Anne — Ohio
A.B. 1954, University of North Carolina

Walker, Robert Williams — Ill.
U.S. Naval Academy

Walsh, Sidney Joseph — Md.
B.C.S. 1948, Eureka College
LL.B. 1949, Miami University

Wilson, George Cadwallader A.B. 1901, University of Pittsburgh	D.C.	West, Norman Axtel A.B. 1940, University of Richmond LL.B. 1943, The George Washington University
Wilson, Rodney William A.B. 1934, The George Washington University	Pa.	West, Stephen Kingsbury A.B. 1926, Yale University LL.B. 1931, Harvard University
Wilt, John Eldridge B.S. 1930, University of California	Calif.	Westermann, Pyatt Davies A.B. 1939, Harvard University
Wine, Clyde, Lawyer A.B. 1934, West Virginia University	W.Va.	White, Andrew Richard B.S. in Ch.E. 1928, Northwestern University
Wise, James Parker B.S. 1931, University of Nebraska	D.C.	Wheeler, Larry Mason B.B.A. 1934, University of Georgia
Wisch, Leon A.B. 1934, University of Nevada	Nev.	Whitaker, Carl Simpson B.S. 1940, A.M. 1941, University of Arkansas
Wiseman, Ernest Aubrey A.B. 1935, Municipal University of Wichita	Kans.	White, John Leslie A.B. 1948, M.S. 1949, Kalamazoo College
Wisner, Roger Royal B.S. 1931, Pennsylvania State College	D.C.	White, Robert Pitman B.S. 1936, Northwestern University
Witmer, William Tatnall A.B. 1935, The George Washington University	D.C.	White, Robert Milton A.B. 1934, The George Washington University
Wittstadt, Gerald LeRoy A.B. 1941, The George Washington University	Va.	Wiesner, Charles Joseph Premier Juris 1928, Charles University Czechoslovakia
Wolfe, Thomas Oliver, Jr. B.S. 1931, University of Maryland	Md.	Wilson, James Rader B.S. 1941, Stanford University
Wolfe, Leon Metcalfe, Jr. A.B. 1941, The George Washington University	Va.	Wilson, William Joseph A.B. 1940, State University of Iowa
Wolfe, Thomas Wilson B.S. 1931, University of Alabama	N.Y.	Williamson, Jack Irving Williamson, Ronald Lee A.B. 1936, Municipal University of Wichita
Wolfe, Arnold Isidor A.B. 1940, Montgomery University	Md.	Wilson, Edward Packard A.B. 1934, Emmanuel Missionary College
Wolfe, Harold Gilbert LL.B. 1941, Harvard University		Williams, James Washington, Jr. B.S. 1941, Virginia Military Institute
Wolfe, Kathryn Gilbert A.B. 1941, The George Washington University		Wilson, Clyde Franklin B.S. 1932, Rose Polytechnic Institute
Wolfe, Robert Lee B.S. 1941, Kent State University	Va.	Wilson, Charles Rubert A.B. 1934, University of Maryland
Wolfe, Robert Lee B.S. 1941, University of Pittsburgh	D.C.	Wilson, George Fraser B.S. 1931, Florida State University
Wolfe, Thomas Edward A.B. 1941, Washington and Lee University		Wilson, Donald Earl B.A. 1940, Virginia Military Institute M.Eng. 1941, Yale University
Wolfe, Paul Howard A.B. 1941, Washington and Lee University	D.C.	Wilson, Francis Joseph B.E.A. 1941, Upsala College
Wolfe, Robert Lee A.B. 1941, Harvard University	N.J.	Wilson, Paul Quay, Jr. A.B. 1939, University of Maryland
Wolfe, Thomas Edward A.B. 1941, Georgia Institute of Technology	Va.	Wilson, Austin Garland A.B. 1941, University of Connecticut
Wolfe, Robert Lee A.B. 1941, Emory University		Wilson, Amelia Annette B.S. 1934, Bucknell State College
Wolfe, Thomas Edward A.B. 1941, University of Oklahoma	Okla.	Woodrow, Alan Francis A.B. 1941, Harvard University
Wolfe, Robert Lee A.B. 1941, University of California		Wommack, Maurice B.S. 1941, United Institutes of Technology
Wolfe, Thomas Edward A.B. 1941, Grand Guard Academy	Calif.	Wood, C. Lawrence B.S. 1931, University of Maryland
Wolfe, Robert Lee LL.B. 1941, The George Washington University	Va.	Wood, Howard Pierce A.B. 1941, Shenandoah College
Wolfe, Thomas Edward A.B. 1941, The George Washington University	D.C.	Woodward, Ella Jeanette A.B. Hons., A.M. 1941, Florida State University
Wolfe, Robert Lee A.B. 1941, University of Maryland	Md.	Woodward, Lane Hamer, Jr. B.S. in C.E. 1931, University of Texas
Wolfe, Thomas Edward A.B. 1941, University	Calif.	
Wolfe, Robert Lee A.B. 1941, The George	Va.	
Wolfe, Thomas Edward A.B. 1941, The George Washington University	Md.	

Wertzenauth, Thomas Joseph — Md.
A.B. 1950, Loyola College

Wesley, Richard Rabillie — Ill.
B.S. 1955, Oklahoma Agricultural and Mechanical College

Wilde, Henry Linde — N.Y.
B.B.A. 1948, College of the City of New York
LL.B. 1951, New York University

Wolfe, Franklin Harris — D.C.
B.S. 1934, University of Maryland

Woolley, Earl Sears — Wyo.
B.S. 1951, Brigham Young University

Wormuth, Grace Alexander — Md.
A.B. 1942, Montana State University

Wren, Charles Bryant — D.C.
B.S. 1951, American University

Woods, David Williams — N.Y.
B.S. 1949, U.S. Coast Guard Academy
J.D. 1955, The George Washington University

Woodworth, Howard Hampton — Md.
B.S. 1942, University of Minnesota

Woolls, James — Va.
A.B. 1951, Virginia Military Institute

Worrell, John William — Pa.
A.B. 1914, University of Pennsylvania

Wrona, Thomas Peter — Md.
B.S. in M.E. 1949, Purdue University

Wyer, William Neal — Md.
B.S. 1951, University of Maryland
LL.B. 1955, The George Washington University

Wyer, John Clayton — W Va.
A.B. 1939, Bethany College

Wynn, William Redmond — Va.
B.S. 1951, High Point College

Wyrick, George Baxley — D.C.
A.B. 1951, Washington College
LL.B. 1951, The George Washington University

Y

Yates, Charles I. — D.C.
B.S. in E.E. 1948, Pennsylvania State University

Young, Francis Wayland — Ala.
B.S. in M.E. 1950, University of Alabama
LL.B. 1955, The George Washington University

Young, Raymond Warren — N.J.
A.B. 1949, New Jersey State Teachers College
A.M. 1950, Rutgers University
Ph.D. 1949, Johns Hopkins University

Yoe, Rose — Ill.
Young, John Jesse — Md.
A.B. 1951, The George Washington University

Z

Zabriskie, John Edmund — Va.
A.B. 1955, Middlebury College

Zaleski, Paul — D.C.
LL.M. 1939, University of Lwow, Poland

Zegers, Leo — W Va.
B.S. in E.E. 1951, West Virginia University

Zeigler, Richard Frederick — Mich.
B.S. in E.E. 1949, Michigan College of Mining and Technology

Zeltz, Eli — Md.
B.S. in Ed. 1951, University of Nebraska

Zimmerman, Carl B. — Iowa
A.B. 1950, State University of Iowa

Zimmerman, Jack Pearce — Kans.
B.S. 1948, U.S. Naval Academy

Zinn, Donald Edward — Pa.
B.A. in M.E. 1954, Pennsylvania State University

Zugelter, Frank Louis — Ohio
B.S. 1953, University of Cincinnati

Zummer, Anthony Semon — Ill.
B.M.E. 1950, Purdue University
LL.B. 1956, The George Washington University

Zuchon, Murray — N.Y.
B.S. 1949, M.S. 1951, New York State College for Teachers

SUMMARIES OF REGISTRATION

SUMMER 1955
FALL AND SPRING SEMESTERS 1955–56

GEOGRAPHICAL DISTRIBUTION OF STUDENTS

United States, Territories, and Possessions

Alabama	6	New Mexico	2
Arizona	3	New York	76
Arkansas	4	North Carolina	15
California	25	Ohio	29
Colorado	6	Oklahoma	10
Connecticut	9	Oregon	3
Delaware	2	Pennsylvania	57
District of Columbia	234	Rhode Island	4
Florida	19	South Carolina	13
Georgia	5	South Dakota	2
Idaho	16	Tennessee	5
Illinois	29	Texas	12
Indiana	8	Utah	19
Iowa	12	Vermont	3
Kansas	19	Virginia	271
Kentucky	5	Washington	9
Louisiana	4	West Virginia	15
Maine	2	Wisconsin	8
Maryland	211	Wyoming	3
Massachusetts	22	Alaska	1
Michigan	19	China	1
Minnesota	7	Hawaii	8
Mississippi	4	India	1
Missouri	16	Iraq	1
Montana	5	Korea	1
Nebraska	3	Puerto Rico	5
Nevada	9	Spain	3
New Hampshire	5	Philippines	6
New Jersey	18	Thailand	5

GRADUATES OF COLLEGES REGISTERED IN THE LAW SCHOOL

Alabama Polytechnic Institute	2	Amherst College	1
Auburn, University of	6	Augustana College	2
Augustana College	2	Barnard College, University of South	1
Bates College	8	Barnard College	1
Bethany College	1	Baylor University	1
Bowdin College	1	Bates College	1
Brown University	1	Boston University	3
California State Polytechnic	1	Bowdoin College	2
Carleton College	2	Bowling Green College of Commerce	2
Colorado, University of	1	Bowling Green State University	1

Bridgeport, University of	1
Brigham Young University	17
Brooklyn College	7
Brooklyn Polytechnic Institute	2
Brown University	4
Bryn Mawr College	1
Bucharest Lyceum	1
Bucharest, University of, Rumania	2
Bucknell University	2
Budapest, University of	1
Buffalo, University of	4
California Institute of Technology	3
California, University of	9
California, University of, at Los Angeles	8
Calvin College	1
Carleton College	1
Carnegie Institute of Technology	2
Carroll Newman College	1
Case Institute of Technology	3
Catholic University of America	8
Central College, Mo.	2
Central State College, Okla.	1
Centre College	1
Charles University, Czechoslovakia	3
Charleston, College of	1
Chicago, University of	4
Cincinnati, University of	4
Citadel, The	8
Clark University	9
Clarkson College of Technology	2
Clemson Agricultural College	1
Colby College	1
Colorado, University of	5
Columbia University	13
Concord College	1
Connecticut, University of	2
Cooper Union	1
Cornell University	22
Cracow, University of, Poland	1
Dartmouth College	8
Delaware, University of	6
Denison University	4
Denver, University of	8
DePaul University	1
Dickinson College	2
Drexel Institute of Technology	6
Duke University	10
Dunbarton College of the Holy Cross	1
Duquesne University	1
École des Hautes Études Internationales, France	1
East Carolina College	1
East Tennessee State College	1
Eastern Illinois State College	1
Elizabethtown College	1
Elmhurst College	1
Emanuel Missionary College	1
Emory and Henry College	1
Emory University	1
Emporia, College of	1
Erskine College	1
Eureka College	1
Evansville, State College	1
Far Eastern University, Philippines	1
Fenn College	1
Fletcher School of Law and Diplomacy	1
Florida Southern College	3
Florida State College for Women	3
Florida State University	5
Florida, University of	7
Fordham University	1
Franklin and Marshall College	1
George Washington University, The	279
Georgetown University	6
Georgia Institute of Technology	6
Georgia, University of	4
Gettysburg College	1
Grinnell College	1
Grove City College	1
Guilford College	1
Gustavus Adolphus College	1
Hamilton College	1
Hardin-Simmons University	3
Hastings College	1
Hampton Institute	1
Harper College	1
Harvard University	4
Harvard College at Law	3
Haverford College	2
Hawaii, University of	1
High Point College	1
Highlands University	1
Hobart College	1
Hofstra College	4
Holden College	1
Holy Cross, College of the	1
Honduras, University of	1
Houston, University of	1
Howard College	2
Idaho State College	1
Idaho, University of	2
Illinois Institute of Technology	2
Illinois, University of	1
Indiana University	1

Innsbruck, University of, Austria	1
Iowa State College of Agriculture and Mechanic Arts	5
Iowa, State University of	10
Iowa Law College	1
Johns Hopkins University	8
Kansas City, University of	1
Kansas State College of Agriculture and Applied Science	2
Kansas State Teachers College, Emporia	1
Kansas, University of	3
Kentucky, University of	2
Knox College	2
Lake Forest College	1
Lafayette College	1
Lake College	2
Lehigh University of	1
Lehigh Valley College	1
Leland Stanford University	3
Lewis, University of	2
Lincoln University of	1
Lombard College	1
Louisiana Polytechnic Institute	1
Louisiana State University	2
Loyola, University of	2
Lyon College	1
Maine, University of	1
Manchester College	1
Manitoba, University of, Canada	1
Marietta College	2
Marquette University	1
Maryland, University of	3
Maryville College	1
Massachusetts Institute of Technology	1
Memphis, University of	2
Mercer University	1
Miami University	5
Michigan College of Mining and Technology	3
Michigan State College	2
Michigan, University of	21
Middle Temple	1
Middlebury College	3
Miles College	1
Milwaukee School of Engineering	1
Minnesota, University of	13
Mississippi Southern College	1
Mississippi, University of	4
Missouri School of Mines and Metallurgy	2
Missouri, University of	7
Montana State University	3
Morgan College	1
Morningside College	1
Morris Harvey College	1
Mount Union College	2
Muhlenberg College	1
Munich, University of, Germany	2
Muskingum College	1
National Chengchi University, China	1
National University	18
Nebraska, University of	4
Nevada, University of	6
New Hampshire, University of	6
New Jersey, State Teachers College, Montclair	2
New Mexico College of Agriculture and Mechanic Arts	1
New Mexico, University of	2
New York, College of the City of	10
New York State College for Teachers	2
New York University	18
Niagara University	1
North Carolina State College of Agriculture and Engineering	2
North Carolina State Teachers College	2
North Carolina, University of	21
North Texas State Teachers College	1
Northeast Missouri State College	1
Northeastern University	5
Northwestern College of Law	1
Northwestern State College of Louisiana	1
Northwestern University	7
Norwich University	2
Notre Dame College	1

Notre Dame, University of	3
Oberlin College	1
Occidental College	1
Ohio Northern University	1
Ohio State University	15
Ohio University	3
Ohio Wesleyan University	2
Oklahoma Agricultural and Mechanical College	1
Oklahoma, University of	5
Omaha, Municipal University of	1
Oregon State College	2
Oregon, University of	1
Pacific University	2
Paris, University of, France	3
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Pennsylvania State Teachers College, Indiana	1
Pennsylvania State Teachers College, Mansfield	1
Pennsylvania State Teachers College, Millersville	1
Pennsylvania State University	21
Pennsylvania, University of	12
Philippines, University of the	1
Pittsburgh, University of	8
Polytechnic Institute of Puerto Rico	1
Pomona University	1
Pratt Institute	1
Presbyterian College	1
Princeton University	9
Pomona College	4
Providence College	3
Puerto Rico, University of	1
Purdue University	19
Queens College	2
Radcliffe College	2
Randolph-Macon College	1
Reed College	1
Regis College	1
Rensselaer Polytechnic Institute	1
Rhode Island, University of	2
Richmond, University of	8
Ricks College	2
Rider College	3
Roanoke College	2
Rollins College	1
Roosevelt College	1
Rose Polytechnic Institute	1
Royal University of Naples	1
Russell Sage College	1
Rutgers University	7
St. Anselm's College	1
St. Bonaventure University	
St. John's College	
St. John's University, N. Y.	
St. Joseph's College	
St. Louis University	
St. Mary College	
St. Mary's College of California	
St. Mary's University	
St. Michael's College	
St. Peter's College	
St. Olaf College	
St. Thomas, College of	
St. Vincent College	
San Francisco, University of	
San Jose State College	
Sarah Lawrence College	
Scranton, University of	
Seoul University	
Shepherd College	
Siena College	
Simpson College, Iowa	
Slovak University, Czechoslovakia	
Smith College	
Sofia, University of, Bulgaria	
South Carolina, University of	
South Dakota School of Mines and Technology	
South, University of the	
Southeastern State College	
Southern California, University of	
Southern University	
Southwestern State College	
Southwestern University	
Springfield College	
Stanford University	
Stevens Institute of Technology	
Swarthmore College	
Syracuse University	
Tafts University, Iowa	
Temple University	
Tennessee, University of	
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Thai Naval Academy	
Thammasat, University of, Thailand	
Thiel College	
Toledo, University of	
Trinity College	
Tufts College	
Tulane University	
Union College	
U. S. Coast Guard Academy	
U. S. Merchant Marine Academy	
U. S. Military Academy	
U. S. Naval Academy	

Loyola College	1
Lycoming College	1
Ohio State Agricultural College	1
Ohio, University of	2
Pittsburgh, University of	12
Princeton University	2
Rutgers, University of	2
Scranton, College	2
Temple University	2
Texas Military Institute	1
Texas Polytechnic Institute	1
Toledo, Union University	2
Toronto, University of	2
Wabash College	17
Washington and Jefferson College	1
Washington, Municipal University of	1
Washington College	1
Washington and Lee University	6
Washington Missionary College	1
Washington University	3
Wayne, University of	4
Western Reserve University	9
Westminster College	1
West Virginia Institute of Technology	1
West Virginia State College	1
West Virginia University	13
West Virginia Wesleyan College	1
Western Kentucky State Teachers College	1
Western Maryland College	1
Western Michigan College of Education	1
Western Reserve University	1
Western State College of Colorado	1
Westminster College	2
Wheaton College, Ill.	1
Wichita, Municipal University of	1
Wilson College	2
Willamette University	1
William and Mary, College of	3
Williams College	2
Winona Teachers College	4
Wisconsin, University of	13
Wooster, College of	2
Worcester Polytechnic Institute	1
Wyoming, University of	1
Yale University	18
Youngstown College	1
Zurich, University of Switzerland	1

SUMMARY OF LAW SCHOOL REGISTRATION

FALL SEMESTER 1935–36

	Men	Women	Total
First Year	342	18	360
Second Year	280	15	295
Third Year	278	17	295
Candidates for the degree of Master of Laws	93	3	96
Candidates for the degree of Master of Comparative Law	16	1	17
Special	6	1	7
Candidates for the degree of Doctor of Juridical Science	11		11
Total	25	3	28
	961	63	1024

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1956-57

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THE SCHOOL OF ENGINEERING
1956-57

THE

GEORGE WASHINGTON UNIVERSITY

BULLETIN

VOL. LV No. 5

THE SCHOOL OF ENGINEERING

WASHINGTON 6, D. C.

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MCMLVI

BY THE UNIVERSITY

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CALENDAR

1956–57

Date	Day	Occasion
1956		
FALL SEMESTER:		
Sept. 4–19	Tuesday through Wednesday	Preadvising for all entering students and advising for freshman and sophomore students
Sept. 13	Thursday	Orientation Assembly for all new students
Sept. 14 and 17	Friday and Monday	Curriculum assemblies*
Sept. 18	Tuesday	Freshman tests Examinations for students who wish to qualify for advanced courses or waive curriculum requirements
Sept. 20 and 21	Thursday and Friday	Registration
Sept. 24	Monday	Academic year begins
Oct. 5	Friday	Last day on which candidates may file comprehensive problem subjects for the degrees of Master of Science in Engineering or Master of Engineering Administration to be conferred in February
Oct. 20	Saturday	Fall Convocation
Nov. 12	Monday	Veterans Day. Holiday
Nov. 22–24	Thursday through Saturday	Thanksgiving recess
Dec. 8	Saturday	Graduate Record Examinations
Dec. 20–Jan. 2	Thursday through Wednesday	Christmas recess
1957		
Jan. 3	Thursday	Classes resume Last day for receiving theses and comprehensive problems of candidates for the Master's degrees and for the professional degrees in Engineering to be conferred in February
Jan. 7–18	Monday through Friday	Advising for entering freshmen and continuing students

* All new students are required to attend one Curriculum Assembly.

Date	Day	Occasion
Jan. 16	Wednesday	Last day of classes for the fall semester
Jan. 21–29	Monday through Tuesday	Examination period
SPRING SEMESTER:		
Jan. 30	Wednesday	Examinations for students who wish to qualify for advanced courses or waive curriculum requirements
Jan. 31 and Feb. 1	Thursday and Friday	Registration
Feb. 4	Monday	Classes resume for the spring semester
Feb. 15	Friday	Last day on which candidates may file comprehensive problem subjects for the degrees of Master of Science in Engineering or Master of Engineering Administration to be conferred in June.
Feb. 22	Friday	Winter Convocation Holiday
April 1	Monday	Last day for receiving applications for scholarships for 1957–58
April 13	Saturday	Graduate Record Examination
April 19–24	Friday through Wednesday	Easter recess
May 3	Friday	Last day for receiving theses and comprehensive problems of candidates for the Master's degrees and for the professional degrees in Engineering to be conferred in June
May 15	Wednesday	Last day of classes for the spring semester
May 28–28	Monday through Tuesday	Examination period
June 2	Sunday	Baccalaureate Sermon
June 5	Wednesday	Commencement
Sept. 19 and 20	Thursday and Friday	Registration for the fall semester of the academic year 1957–58

THE UNIVERSITY

THE BOARD OF TRUSTEES

The Board of Trustees of the University is composed of the President of the University ex officio and the following persons by election:

Robert Vedder Fleming, LL.D., *Chairman*
Newell Windom Ellison, A.B., LL.B., *Secretary*
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Walter Rupert Tuckerman, A.B., LL.B., LL.D.
James Edwin Webb, A.B., LL.D.
Alexander Wetmore, Ph.D., Sc.D.
*Charles Stanley White, M.D., Sc.D.
Lloyd Bennett Wilson

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*Nominated by the alumni.

OFFICERS OF ADMINISTRATION

THE UNIVERSITY

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Oswald Symister Colclough, B.S., LL.B., LL.D., *Dean of Faculties*
Myrna Pauline Sedgwick, A.B., *Administrative Secretary*
Henry William Herzog, B.S., *Treasurer*
Claud Max Farrington, A.M., *Assistant to the President*
Harold Griffith Sutton, M.S., *Director of Admissions*
Fred Everett Nessell, A.B., *Registrar; Secretary of the Faculties*
John Russell Mason, A.M., M.S. in L.S., *Librarian; Curator of Art*
Benjamin Douglass Van Evera, Ph.D., Sc.D., *Coordinator of Scientific Activities*
Virginia Randolph Kirkbride, A.M., *Director of Activities for Women*
Don Carlos Faith, Ph.D., *Director of Activities for Men; Director of Veterans Education*
Alan Thomas Deibert, A.M., *Adviser to Students from Foreign Countries*
Burnice Herman Jarman, A.M., Ed.D., *Dean of the Summer Sessions*
Richard Bernard Castell, A.B., M.D., *Director of Health Administration*
Ruth Harriet Atwell, A.M., *Director of Physical Education for Women*
Carl Swyter, B.S. in E.E., *Director of Air Science*

THE COLLEGES, SCHOOLS, AND DIVISIONS

George Martin Koehl, A.M., *Dean of the Junior College*
Henry Grattan Doyle, A.M., LL.D., Litt.D., *Dean of Columbian College*
Robert Whitney Bolwell, Ph.D., *Chairman of the Graduate Council*
Walter Andrew Bloedorn, A.M., M.D., Sc.D., *Dean of the School of Medicine; Medical Director of the University Hospital*
Oswald Symister Colclough, B.S., LL.B., LL.D., *Acting Dean of the Law School*
Martin Alexander Mason, B.S. in Eng., Ing.-Dr., *Dean of the School of Engineering*
Charles Watson Bliven, M.S., *Dean of the School of Pharmacy*
*James Harold Fox, A.M., Ed.D., *Dean of the School of Education*
Arthur Edward Burns, Ph.D., *Dean of the School of Government*
Elmer Louis Kayser, Ph.D., LL.D., *Dean of the Division of University Students*
Warren Reed West, Ph.D., *Dean of the Division of Special Students*
Mitchell Dreese, Ph.D., *Dean of the College of General Studies*

* On sabbatical leave spring semester 1956-57.

Victor Frederick Ludewig, A.B., B.S., *Administrator of the University Hospital*
Calvin Darlington Linton, Ph.D., *Associate Dean of Columbian College*
William Lewis Turner, Ph.D., *Assistant Dean of the Junior College*
Carl Bartleson Lavell, A.M., *Assistant Dean in the Junior College*
Angus MacIvor Griffin, Ph.D., *Assistant Dean of the School of Medicine*
Carville Dickinson Benson, A.B., LL.B., S.J.D., *Assistant Dean of the Law School*
Louis Harkey Mayo, B.S., LL.B., *Assistant Dean of the Law School*
Robert Miles Leonard, Ph.D., *Assistant Dean of the School of Pharmacy*
Blake Smith Root, A.M., Ed.D., *Assistant Dean of the School of Education*
Joe Lee Jessup, M.B.A., *Assistant Dean in the School of Government*
John Francis Latimer, Ph.D., *Assistant Dean of the College of General Studies; University Marshal*
John Gage Allee, Jr., Ph.D., *Assistant Dean of the Division of University Students*

HISTORY AND ORGANIZATION

HISTORY

The idea of a university located in the Capital of the Nation was sponsored by George Washington, who during his public life urged the establishment of such an institution and who in his will left fifty shares of stock in the Potomac (Canal) Company for the endowment of a university to be established in the District of Columbia "to which the youth of fortune and talents from all parts thereof might be sent for the completion of their Education in all the branches of polite literature;—in arts and Sciences,—in acquiring knowledge in the principles of Politics & good Government".

It was George Washington's hope that the "General Government" would extend toward such an institution "a fostering hand". No steps were taken by Congress to carry out the provision of Washington's will, and the stock that he had bequeathed for the establishment of a university in the District of Columbia became valueless owing to the failure of the Potomac Canal properties.

Meanwhile, however, a movement was started by private persons under the leadership of Luther Rice to establish an institution of higher learning at the seat of the National Government for the education of the Baptist ministry and to afford general collegiate training. In 1819 an association was formed by Luther Rice, Obadiah B. Brown, Spencer H. Cone, and Enoch Reynolds for the purpose of raising funds to buy land for the use of the college.

A group of the Nation's leaders who were especially interested in Washington's idea became patrons of the college and contributed to funds raised for the purchase of land and erection of buildings. Among them were James Monroe, President of the United States; William H. Crawford, Secretary of the Treasury; John C. Calhoun, Secretary of War; William Wirt, Attorney General; Return J. Meigs, Postmaster General; and thirty-two members of the Congress.

Legally to implement the college a petition was made to Congress for the incorporation of "the General Convention of the Baptist Denomination in the District of Columbia for evangelical and literary purposes". This petition was denied by Congress, on April 26, 1820, because of its sectarian character.

Failing to obtain a denominational charter, members of the association enlarged their objective to embrace national aims, and with the sponsorship of Government leaders there was presented in Congress a

bill for the incorporation of "the Columbian Society for literary purposes", it being proposed to realize in this way "the aspirations of Washington, Jefferson and Madison for the erection of a university at the seat of the federal government".

Acting upon this second petition, on February 9, 1821, Congress chartered Columbian College in the District of Columbia, inserting in the charter by special action the provision "That persons of every religious denomination shall be capable of being elected Trustees; nor shall any person, either as President, Professor, Tutor or pupil, be refused admittance into said College or denied any of the privileges, immunities or advantages thereof, for or on account of his sentiments in matters of religion".

Thus Columbian College in the District of Columbia was chartered by Congress as one of the early nonsectarian institutions of higher learning in the United States, under the distinguished favor of President James Monroe and members of his Cabinet.

A tract of approximately forty-seven acres, extending about one-half mile northwest of Boundary Street (Florida Avenue) between Fourteenth and Fifteenth Streets, was purchased and by 1822 the main building was completed sufficiently to use.

Two years later, when the first Commencement was held on December 15, 1824, Congress and the Supreme Court adjourned their sessions to enable their members to attend the exercises. President Monroe, John Quincy Adams, John C. Calhoun, Henry Clay, and the Marquis de Lafayette headed the eminent company in attendance.

By an act of Congress of March 3, 1873, the name of the college was changed to "Columbian University", in recognition of the enlarged scope of the institution. In 1884 the University was moved from its first location on "College Hill", now Columbia Heights, to the new University Hall built for it at Fifteenth and H Streets. Near-by buildings accommodated the School of Medicine and, somewhat later, the Law School.

For a period of six years, from 1898 to 1904, the University was placed under control of the Baptist Denomination. In 1904 an act restoring the original secular character of the University and authorizing change of name to The George Washington University was passed by Congress.

Subsequently all the colleges, schools, and divisions of the University except the School of Medicine were brought together in the area bounded by Nineteenth, Twenty-third, and G Streets, and Pennsylvania Avenue NW. The School of Medicine is situated on H Street between Thirteenth and Fourteenth Streets NW.

The endowment of the University is $4,000,000.

THE COLLEGES, SCHOOLS, AND DIVISIONS

The George Washington University includes fourteen colleges, schools, and divisions, as follows:

The Junior College offers the work of the first two years of the four-year college program in the liberal arts and sciences and two years of pre-professional work. Each of these curricula leads to the degree of Associate in Arts. It also offers two-year terminal curricula. Those in Accounting and Secretarial Studies lead to the degree of Associate in Arts; those in Home Economics, Medical Technology—Basic Course, and Physical Science lead to the degree of Associate in Science.

Columbian College offers the work of the junior and senior years of the four-year college program in the liberal arts and sciences leading to the degrees of Bachelor of Arts and Bachelor of Science. It also offers the studies leading to the degrees of Master of Arts and Master of Science in the fields of the liberal arts and sciences.

The Graduate Council offers a program of advanced study and research leading to the degree of Doctor of Philosophy.

The School of Medicine offers work leading to the degree of Doctor of Medicine.

The Law School offers professional and graduate courses leading to the degrees of Bachelor of Laws, Juris Doctor, Master of Laws, Master of Comparative Law, and Doctor of Juridical Science.

The School of Engineering offers courses leading to the degrees of Bachelor of Civil Engineering, Bachelor of Electrical Engineering, Bachelor of Mechanical Engineering, Bachelor of Science in Engineering, Master of Science in Engineering, and Master of Engineering Administration. It also directs work leading to the professonal degrees in the fields of civil, electrical, and mechanical engineering.

The School of Pharmacy offers courses leading to the degrees of Bachelor of Science in Pharmacy and Master of Science in Pharmacy.

The School of Education offers undergraduate programs leading to the degrees of Bachelor of Arts in Education, Bachelor of Science in Home Economics, and Bachelor of Science in Physical Education, and graduate studies leading to the degrees of Master of Arts in Education and Doctor of Education.

The School of Government offers undergraduate programs of study in Foreign Affairs, Accounting, Business Administration, and Statistics, leading to the degree of Bachelor of Arts in Government. Graduate work is offered leading to the following degrees: Master of Arts in Government in the fields of Foreign Affairs, Economic Policy, Accounting, Business and Economic Statistics, and Counseling; Master of Arts in Public Administration; Master of Arts in Personnel Administration; Master of Business Administration; and Doctor of Business Administration.

The College of General Studies supplements the adult education program of the University through its Off-Campus Division, Campus Division, and Division of Community Services.

The Division of University Students makes available courses for mature students, not candidates for degrees in this University.

The Division of Special Students makes available courses for students in the process of qualifying for degree candidacy.

The Division of Air Science offers a program of Air Force ROTC training which is integrated with the curricula of the colleges and schools of the University and leads to appointment as a commissioned officer in the United States Air Force Reserve.

The Summer Sessions.

ACADEMIC STATUS

The George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools. This is important to students who wish to transfer credits from one institution to another.

The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board.

The Law School is a charter member of the Association of American Law Schools and is approved by the Section of Legal Education and Admissions to the Bar of the American Bar Association. The School of Medicine is a member of the Association of American Medical Colleges and is one of the medical colleges which have been continuously approved by the American Medical Association. The School of Pharmacy is accredited by the American Council on Pharmaceutical Education as a class "A" school. It is a member of the American Association of Colleges of Pharmacy. The School of Engineering is on the accredited list of the Engineers' Council for Professional Development. The School of Education is a charter member of the American Association of Colleges for Teacher Education.

LOCATION

The George Washington University is in downtown Washington four blocks west of the White House and east of the Potomac River with its extensive parkway. Readily accessible to the University are many of the departments of the Government, including the Department of State, the Department of the Treasury, the Department of Justice, the Department of the Army, the Department of the Navy, the Department of the Interior, the Department of Agriculture, the Department of Commerce,

and the Department of Labor, as well as the National Archives, the Capitol, the Library of Congress, the National Academy of Sciences, the Pan American Union, the National Gallery of Art, and the Corcoran Gallery of Art.

GOVERNMENT

The government and general educational management of The George Washington University are vested in a self-perpetuating Board of Trustees, with the President of the University as a member ex officio. The members of the Board are named for a period of three years and are divided into three classes. The members of one class are elected at each annual meeting to fill the places of the members whose terms of office expire. Two members of each class are nominated by the Alumni Association.

THE SCHOOL OF ENGINEERING

1956–57

THE SCHOOL OF ENGINEERING

THE FACULTY AND STAFF OF INSTRUCTION *

MARTIN ALEXANDER MASON, B.S. in Eng., Ing.-Dr., *Dean of the School of Engineering*

GEORGE ABRAHAM
Lecturer in Electrical Engineering
B.S. 1940, Brown University; M.S. 1942, Harvard University. Radio Engineer, R.C.A. 1941; Radio Engineer 1942–45, Head, Science Education 1945–52, Electronic Scientist 1952– , Naval Research Laboratory. Lecturer, University of Maryland 1947–52; Lecturer in Electrical Engineering, The George Washington University 1952– . UNESCO Panel on Educational Radio, Chairman, Intercollegiate Broadcasting System 1949– . Member, APS, IRE, AIEE, AAAS, AAPT, ASEE, Sci. Res. Soc. Am., Sigma Xi.

NORMAN BRUCE AMES
Professor of Electrical Engineering
B.S. in E.E. 1916, Mississippi State College. B.S. in E.E. 1917, Harvard University; B.S. in E.E. 1917, LL.B. 1925, E.E. 1929, The George Washington University; B.S. in E.E. 1935, Massachusetts Institute of Technology. Colonel, U.S. Air Force, Director and Secretary, Murphy & Ames, Inc.; Chairman, Montgomery County Charter Committee 1947–50. Instructor to Professor 1920–29, Professor of Electrical Engineering 1929– , The George Washington University. Professional Engineer, Maryland. Fellow, AIEE.

PERCY HARRY ANDROS
Lecturer in Civil Engineering
B.S. Geo. Eng. 1938, University of Utah. Hydraulic Engineer, U.S. Geological Survey 1938–41, Cartographic Engineer, U.S. Coast and Geodetic Survey 1941– . Lecturer in Civil Engineering, The George Washington University 1956– .

WILLIAM WALTER BALWANZ
Lecturer in Electrical Engineering
B.E.E. 1941, The George Washington University; M.S. in E.E. 1948, University of Maryland. Electronic Engineer, U.S. Naval Air Test Center, Patuxent, Maryland, 1941–46, Electronics Scientist, Naval Research Laboratory 1946– . Lecturer in Electrical Engineering, The George Washington University 1952– . Professional Engineer, Virginia and District of Columbia. Member, AIEE, IRE, AIP, Sigma Tau.

ROBERT BART
Lecturer in Civil Engineering
B.E. [illegible], The City College of the City of New York, Sc.D. 1951, Massachusetts Institute of Technology. Structural Research Engineer, David Taylor Model Basin 1951– . Lecturer in Civil Engineering, The George Washington University 1956– . Member, Sigma Xi.

THOMAS BENJAMIN BROWN
Professor of Physics
A.B. 1913, Ph.D. 1916, Cornell University. Assistant Professor to Professor 1917–19, Professor of Physics 1919– , The George Washington University. Member, APS, AAPT, Philosophical Society of Washington, Sigma Xi.

JOSEPH WALTER BURDELL, JR.
Lecturer in Civil Engineering
B.E. 1948, Cornell University; Highway Engineer, Bureau of Public Roads 1949– ; Lecturer in Civil Engineering, The George Washington University 1957– .

* The President of the University, the Dean of Faculties, the Dean of the School, Professors, Associate Professors and Assistant Professors constitute the Faculty.

GLEN DARWIN CAMP
Professor of Operations Research
B.S. 1927, A.M. 1933, Ph.D. 1935, University of California. Teaching Fellow 1931–35, Physicist, Division of War Research 1942–46, University of California; Instructor, City College of San Francisco 1935–42; Operations Group, Massachusetts Institute of Technology 1942–51; Director, Operations Research, Melpar, Inc., 1951–56. Professorial Lecturer on Engineering Administration, The George Washington University 1954–56; Professor of Operations Research 1956– , The George Washington University

RAPHAEL DAVID CAHN
Lecturer in Mechanical Engineering
B.M.E. 1944, The George Washington University; Engineer, Naval Research Laboratory 1944–55, Development Control Engineer, U.S. Department of the Navy 1955– . Lecturer in Mechanical Engineering, The George Washington University 1954– .

PAUL ARTHUR CRAFTON
Lecturer in Mechanical Engineering
B.M.E. 1944, College of the City of New York, M.S. 1950, University of Maryland. Mechanical Engineer, Radio Corporation of America 1944, Head, Mechanical Engineering Section, Security Systems Branch, Naval Research Laboratory 1944– . Lecturer in Mechanical Engineering, The George Washington University 1954– . Professional Engineer, District of Columbia. Member, ASME, Tau Beta Pi.

BENJAMIN CARPENTER CRUICKSHANKS
Professor of Mechanical Engineering
B.S. in M.E. 1920, The George Washington University. Editor, Hartford Steam Boiler Inspection and Insurance Company 1923–27. Instructor to Professor 1920–42, Professor of Mechanical Engineering 1942– , The George Washington University. Research Associate, National Bureau of Standards 1928–30. Professional Engineer, District of Columbia. Member, ASME, Sigma Tau.

CHARLES EUGENE CUTTS
Professorial Lecturer in Civil Engineering
B.C.E. 1936, M.S. in C.E. 1939, Ph.D. 1949, University of Minnesota, Associate Professor of Civil Engineering, University of Florida 1950–55; Engineer, National Science Foundation 1953– ; Professorial Lecturer in Civil Engineering, The George Washington University 1955– . Member, ASCE, ASEE, ACI. Professional Engineer, Florida and Minnesota.

ROBERT CHARLES DEHART
Lecturer in Civil Engineering
B.S. in C.E. 1938, University of Wyoming; M.S. in C.E. 1940, Ph.D. 1955, Illinois Institute of Technology. Design Engineer, Standard Oil Company of Indiana 1940–46; Associate Professor of Civil Engineering, Montana State College 1946–51; Structural Analyst, Armed Forces Special Weapons Project 1953– ; Lecturer in Civil Engineering, The George Washington University 1956– .

FRANK LOUIS DIMAGGIO
Lecturer in Civil Engineering
B.S. 1950, M.S. 1951, Ph.D. 1954, Columbia University; Instructor in Civil Engineering, Columbia University 1952–54; Engineer U. S. Department of the Navy 1954– ; Lecturer in Civil Engineering, The George Washington University 1956– .

RAYMOND PUGH EYMAN
Associate Professor of Civil Engineering
C.E. 1914, Ohio State University. Deck Officer to Commander 1914–49, Chief, Division of Coastal Surveys 1945–46, U. S. Coast and Geodetic Survey. Associate Professor of Civil Engineering, The George Washington University 1947– . Member, Sigma Xi.

ERNEST FRANK
Associate Professor of Electrical Engineering
B.E.E. 1945, New York University; M.S. in E.E. 1949, Ph.D. 1953, University of Pennsylvania. Consultant, Brookhaven National Laboratory 1948; Research Associate, University of Pennsylvania 1950; Project Engineer, Sperry Gyroscope Company 1947; Assistant Professor of Electrical Engineering, University of Pennsylvania 1951–56; Research Engineer, Glenn L. Martin Company 1947; Assistant Professor of Electrical Engineering, University of Pennsylvania 1947–56; Associate Professor of Electrical Engineering, The George Washington University 1956– . Member, AIEE, Sigma Xi, Tau Beta Pi.

RALPH EDWARD FUHRMAN
Professorial Lecturer in Civil Engineering
B.S. in C.E. 1930, University of Kansas; M.S. in Eng. 1937, Harvard University. [illegible] 1934, Johns Hopkins University; Sanitary Engineer, Sewage Treatment Plant, Springfield, Missouri 1935–36; Assistant Superintendent and Superintendent, D. C. Sewage Treatment Plant 1942–51; Assistant Chief, Division of Sanitary Engineering, D. C. [illegible] Lecturer 1941–54, Professorial Lecturer in Civil Engineering 1954–, The George Washington University. Professional Engineer, Maryland. Member of Interstate Commission on Potomac River Basin. Member, ASCE, APHA, AWWA, Fed. Sew. and Ind. Wastes Assoc., AAAS.

WILLIAM HERBERT GOSSARD
Lecturer in Electrical Engineering
A.B. 1944, High Point College; M.S. in E.E. 1950, North Carolina State College. U.S. Navy 1944–46; Electronics Scientist, Armed Forces Security Agency 1950–. Instructor, Naval Academy Preparatory School 1946. Lecturer in Electrical Engineering, The George Washington University 1952–. Member, IRE.

DONALD JOSEPH HANRAHAN
Assistant Professor of Electrical Engineering
B.E.E. 1950, The George Washington University; Graduate Training Course, Allis-Chalmers Manufacturing Company, Test Engineer, Engineer Research and Development Laboratories 1950–51. Assistant Professor of Electrical Engineering, The George Washington University 1953–. Associate AIEE, Member ASEE.

ROLLAND LEE HARDY
Associate in Civil Engineering
B.S. 1942, University of Illinois; B.S. in C.E. 1950, Missouri School of Mines; C.E. 1951, University of Missouri; Project Engineer, Engineering Research and Development Laboratories 1950–51. Consulting Engineer (private practice) 1951. Associate in Civil Engineering, The George Washington University 1952–. Associate Member, ASCE; Professional Engineer, Missouri and Virginia.

FOREST KLAIRE HARRIS
Professorial Lecturer in Electrical Engineering
A.B. 1927, Oklahoma University; M.S. 1928, Ph.D. 1931, Johns Hopkins University. Junior Physicist in Physics, National Bureau of Standards 1929–. Professorial Lecturer in Electrical Engineering, The George Washington University 1931–.

ROBERT AARON HECHTMAN
Professor of Civil Engineering
B.S. in C.E. 1938, M.S. in C.E. 1939, University of Washington; Ph.D. 1948, University of Illinois. Research Assistant, Engineering Experiment Station, University of Washington 1938–39; Graduate Engineer, Corps of Engineers, U.S. Army 1939–41; Administrative Assistant, Bureau of Yards and Docks, U.S. Navy 1941–42; Research Engineer, University of Illinois 1942–43; Professor and Director of Structural Research, University of Washington 1943–51; Professor of Civil Engineering, The George Washington University 1951–. Member, Science Advisory Board, U.S. Air Force 1951–53; Member, Committee on Research, Highway Research Board, National Research Council 1953–. Fellow, ASCE; AWS, ACI, Colorado Research Council on Research and Building Materials, Inc.

EN YUN HSU
Lecturer in Civil Engineering
B.S. in C.E. 1941, National Tsinghua University; M.S. 1946, Ph.D. 1948, State University of Iowa; Research Associate, State University of Iowa 1946–47; Research Engineer, Institute of Hydraulic Research, State University of Iowa 1947–51; Hydraulic Engineer, Upper Middle Basin Board 1951–52; Research Engineer, The George Washington University 1952–. Member, ASCE, ACI, AWS, NY.

GILBERT CHESTER JACOBUS
Professorial Lecturer in Engineering Administration
B.S. in C.E. 1926, Rensselaer Polytechnic Institute; M.B.A. 1931, New York University; LL.B. 1939, New York University; Partner, Jacobus, Crampton & Jacobus, New York City 1931–. Assistant Professor, New York University, Graduate Division, Public Administration 1939–41; Chief, Industrial Mobilization Division, Office of the Assistant Secretary of War 1941–42; Chief, Ordnance Branch, Chief, Ordnance Division, Public Affairs Officer, Federal Civil Defense Administration

tration; Deputy Commandant and Director of Instruction, Army Command Management School. Professorial Lecturer on Engineering Administration, The George Washington University 1955– . Member, Am. Bar Assoc., Eng. Soc. of Rutgers Univ., Fed. Com. Bar Assoc. Am. Mgt. Assoc.

*JOHN KAYE
Associate Professor of Mechanical Engineering
B.S. in M.E. 1939, M.S. in M.E. 1948, California Institute of Technology; Aeronautical Engineer, War Production Board 1941–43; Mechanical Engineer, Pan American Airways 1943–45; Mechanical Engineer, Hydrodynamics Laboratory, California Institute of Technology 1945–50. Assistant Professor and Associate Professor of Mechanical Engineering, The George Washington University 1950– . Member, ASME, ASEE, Sigma Xi.

KERMIT MILTON LOVEWELL
Lecturer in Electrical Engineering
B.S. in E.E. 1928, University of Wisconsin. Junior to Senior Engineer, Potomac Electric Power Company 1934– . Lecturer in Electrical Engineering, The George Washington University 1944–45, 1951– . Professional Engineer, District of Columbia. Member, AIEE.

MARTIN ALEXANDER MASON
Professor of Civil Engineering
B.S. in Eng. 1931, The George Washington University; Ing.-Dr. 1938, University of Grenoble. John R. Freeman Scholar 1938. Junior Engineer to Engineer, National Bureau of Standards 1924–40, Chief Engineer, Beach Erosion Board, Corps of Engineers 1941– . Dean, Lecturer in Mechanical Engineering 1941–44, Professor of Civil Engineering 1951– , of the School of Engineering 1951– , The George Washington University. Professional Engineer, District of Columbia. Member, ASME, ASCE, AGU, ASEE, Washington Society of Engineers, Washington Academy of Sciences, Sigma Tau, Sigma Xi.

KENNETH FREDERICK McCLURE
Professorial Lecturer on Engineering Administration
B.S. 1931, M.S. 1932, Municipal University of Wichita; LL.B. 1941, University of Maryland. Chemist, Derby Oil Company 1931–34, Chemist, U. S. Food and Drug Administration 1934–41, Business Analyst, WPB and BEW, FEA 1941–45, Attorney, Department of Commerce 1946– (Assistant General Counsel 1948–); Professorial Lecturer on Engineering Administration, The George Washington University 1955– . Member, Fed. Bar Assoc.

PAUL WILLIAMSON McGANN
Professorial Lecturer on Engineering Administration
A.B. 1928, Brown University; Lecturer in Economics, University of California 1947–48; Economist and Chief Economist, U.S. Bureau of Mines 1947– . Professorial Lecturer on Engineering Administration, The George Washington University 1955– . Member, ASME, AEA, Econometric Soc.

FLORENCE MARIE MEARS
Professor of Mathematics
A.B. 1912, Goucher College; A.M. 1924, Ph.D. 1927, Cornell University. Head, Department of Mathematics, Alabama College 1927–28, Assistant Professor of Mathematics, Pennsylvania State College 1928–29. Assistant Professor to Professor 1929–44, Professor of Mathematics 1944– , The George Washington University. Member, Sigma Xi, Phi Beta Kappa, Phi Kappa Phi, Sigma Delta Epsilon, Am. Math. Soc., Am. Math. Assn., AAUW, AAAS.

FREDERICK THORP MOORE
Professorial Lecturer in Economics
A.B., A.M. 1941, University of Wisconsin; Ph.D. 1951, University of California. Instructor, University of California 1945–47, Professor of Economics, University of Puget Sound 1947–50, Professor of Economics and Chairman of Department, University of California 1950–51, Chief, Interindustry Analysis, U.S. Department of Labor 1951–53, Chief Economist, Washington Office, Rand Corporation 1953– , Professorial Lecturer in Economics, The George Washington University 1953– . Member, Am. Econ. Assn., Econometric Soc., ASA.

* On sabbatical leave 1956–57.

ROBERT HAMILTON MOORE
Associate Professor of English Composition
A.B. 1924, A.M. 1928, Indiana University. Ph.D. 1948, University of Illinois. Reporter, *The Louisville Times* 1928–29. Tutor 1934–35, 1937. Assistant 1938–43. Instructor in English, University of Illinois 1943–49. Associate Professor of English Composition, The George Washington University 1949– . Member Delta Chi.

THOMAS EDWARD MUTCHLER
Associate in Civil Engineering
B.E.C. 1931, The George Washington University; Airport Engineer, U.S. Air Force; Civil Engineer, Leo Ruder Company 1938– ; Associate in Civil Engineering, The George Washington University 1946– . Professional Engineer, Texas.

DeWITT O'KELLY MYATT
Part-time Lecturer in Engineering Administration
B.E.E. 1930, M.E.E. 1931, University of Louisville. Editor and Technical Administrator, U.S. Army Air Forces, Materiel Command, Wright Field 1941–46; Chief, Electronics Laboratory, Industrial and Engineering Chemistry 1946–53; Engineering Administrator, Avco Research Corporation 1954– . Professional Lecturer on Engineering Administration, The George Washington University 1955– . Member, Sigma Tau, ACS, AIChE, Professional Engineer, District of Columbia.

CHARLES RUDOLPH NAESER
Professor of Chemistry
B.S. 1931, University of Wisconsin; M.S. 1933, Ph.D. 1935, University of Illinois. Chemical Warfare service 1942–45; Technical Adviser, H.Q. European Command 1950. Instructor to Professor 1935–47, Professor of Chemistry 1947– , The George Washington University. Member, ACS, AAAS, AALP, Sigma Xi.

RICHARD NORMAN OWENS
Professor of Business Administration
A.B. [illegible] M.A. 1927, University of Missouri; A.M. 1932, Ph.D. 1938, University of [illegible]; C.P.A. 1941, State of Indiana. Assistant Professor of Economics, Washington University 1934–41, Associate Professor of Business Administration, Emory University 1941–43, Associate Professor of Accounting and Business Administration, Indiana University 1943–46, Professor of Business Administration 1946– , The George Washington University. Member, Phi Beta Kappa, Beta Gamma Sigma.

RAWLINGS STINE POOLE
Part-time Lecturer in Engineering Administration
B.E. 1924, North Carolina State College. Deputy Assistant Administrator for Construction and Real Estate 1948–51, Civilian Executive to Army Ordnance Chief of Research and Development 1951–53, Office of Secretary of Defense 1954– . Professorial Lecturer in Engineering Administration, The George Washington University 1954– . Member, Pi Kappa Phi, Delta Sigma Pi, Blue Key, Tau Beta Pi.

HENRY JOSEPH POWELL
Lecturer in Mechanical Engineering
B.S. in M.E. [illegible], M.S. 1934, Worcester Polytechnic Institute; [illegible], Worcester Polytechnic Institute; [illegible], The George Washington University 1954– . Member, A.S.M.E.

LLEWELLYN RUBIN
Associate in Electrical Engineering
B.S. in E.E. [illegible], M.S. 1932, University of Pennsylvania; Research Associate, Westinghouse Electric Corporation; Engineer in Electronics, The George Washington University 1946– . Member, Tau Beta Pi, IRE.

ALBERT IRVING SAFRACHER
Part-time Lecturer in Engineering Administration
[illegible], Harvard University; E.E. 1931, [illegible], Harvard University; [illegible], Professor of Engineering, Polytechnic Institute of Brooklyn 1938–46, Professor of Electrical Engineering, Newark College of Engineering 1946–47, Professor of Electrical Engineering, Polytechnic Institute of Brooklyn 1947–48, Professor of Electrical Engineering, Newark College of Engineering 1948–49, Professor, Washington Institute of Technology 1949–51, Dean, Graduate School, Georgia Institute of Technology 1951–53, Professor of Electrical Engineering, Georgia Institute of Technology 1953–54, Professor of Engineering Administration, The George Washington University 1954– . Member, AIEE, IRE, Am. Math. Soc., ASEE, SAME, Professional Engineer, Florida.

DWIGHT EDWARD SHYTLE
Lecturer in Electrical Engineering
Executive Vice-President and Chief Engineer, Combustioneer Corporation 1934– . Lieutenant, U. S. Navy 1943–46. Instructor to Lecturer in Electrical Engineering, The George Washington University 1943–. Member, ASHaVE.

RALPH SIEGEL
Lecturer in Electrical Engineering
B.S. in E.E. 1941, Virginia Military Institute; Application Engineer, General Electric Company 1941– ; Lecturer in Electrical Engineering, The George Washington University 1955– . Member AIEE, Wash. Soc. Engrs. Professional Engineer, New York, Pennsylvania, Virginia, District of Columbia.

LEWIS SLACK
Associate Professor of Physics
B.S. 1944, Harvard University; Ph.D. 1950, Washington University. Physicist, Naval Research Laboratory 1950–54. Associate Professor of Physics, The George Washington University 1954– . Member Sigma Xi, Am. Phys. Soc., Am. Assoc. Phys. Teachers.

WALDO EDWARD SMITH
Professorial Lecturer in Civil Engineering
B.E. in C.E. 1923, M.S. in C.E. 1924, The State University of Iowa. Hydraulic Engineer, Muskingum Water Conservancy District 1935–50; Executive Secretary, American Geophysical Union 1944– . Associate Professor, Robert College 1925–31; Assistant Professor, Dakota State College 1931–35; Professorial Lecturer in Civil Engineering, The George Washington University 1946– . Member, AGU, ASCE, Tau Beta Pi, Sigma Xi.

ALBERT RICHARD STIRNI
Lecturer in Civil Engineering
B.S. in C.E. 1934, Georgia Institute of Technology; U.S. Coast and Geodetic Survey 1934–35; Topographic Engineer, U. S. Geological Survey 1935–41; Cartographic Engineer, U.S. Coast and Geodetic Survey 1941–. Lecturer in Civil Engineering, The George Washington University 1956– . Member, Am. Cong. Surv. & Map. Professional Engineer, District of Columbia, Maryland, Georgia; Land Surveyor, North Carolina, Georgia.

HAROLD FICKEN STEGMAN
Lecturer in Civil Engineering
C.E. 1911, Rensselaer Polytechnic Institute. Surveyor, U.S. Coast and Geodetic Survey 1911–14; Cartographer, U.S. Coast and Geodetic Survey 1914–; Topographic Engineer, U.S. Forest Service 1917; Cartographer, U.S. Coast and Geodetic Survey 1918– . Lecturer in Civil Engineering, The George Washington University 1928– . Member, Sigma Xi, Am. Cong. Surv. & Map, Professional Engineer, Maryland.

LEO SHANLEY STRAW
Associate in Mechanical Engineering
B.E. in C.E. 1922, South Dakota State College; Cartographic Engineer, U.S. Coast and Geodetic Survey 1922– . Associate in Mechanical Engineering, The George Washington University 1956– . Member, Am. Cong. Surv. & Map.

VICTOR SZEBEHELY
Professorial Lecturer in Mechanical Engineering
Dr. Eng. 1948, University of Budapest. Specialist, David Taylor Model Basin 1951– ; Associate Professor of Mechanical Engineering, Virginia Polytechnic Institute 1954–55; Professorial Lecturer in Mechanical Engineering, The George Washington University 1954– . Member ASEE, Inst. Aero Sci., Soc. Nav. Arch. and Marine Engrs., Va. Acad. Sci., Sigma Xi.

JAMES HENRY TAYLOR
Professor of Mathematics
B.S. 1918, University of Nebraska, A.M. 1920, Princeton University; Ph.D. 1924, University of Chicago. Instructor, University of Nebraska 1920–22; National Research Fellow, Princeton University 1924–25; Professor, University of Wisconsin 1926–30; Professor of Mathematics, The George Washington University 1930– . Member, A. Math. Soc., M.Ass.A., AAUP, AAAS, Washington Academy of Sciences, Philosophical Society of Washington, Sigma Xi.

ROBERT CORBIN VINCENT
Professor of Chemistry
A.B. 1928, A.M. 1929, Ph.D. 1940, Cornell University. Instructor to Professor 1941– .

Professor of Chemistry 1956– . The George Washington University. Member, Sigma Xi, Kappa Phi Kappa.

JACK EDWARD WALTERS
Professor of Engineering Administration
B.S. in M.E. 1922; M.S. in M.E. 1924, Purdue University; Ph.D. 1934, Cornell University. Director of Personnel and Professor of Personnel Administration, Purdue University 1922–43. Vice-President, Revere Copper & Brass Co. 1940–43; Principal, McKinsey & Co. 1943–45. President, Alfred University 1945–48; Professor of Management, Dartmouth College 1948–54; Chairman, Department of Engineering Administration, Rutgers University 1954–55. Professor of Engineering Administration, The George Washington University 1955– . Member, ASME, AMA, SAM, IRRA, Tau Beta Pi.

CARL HUGO WALTHER
Professor of Civil Engineering
B.E. 1925, M.C.E. 1931, Johns Hopkins University. Structural Designer, Bethlehem Steel Company 1929; Structural Consultant, Quartermaster General 1944–46. Alternate Member, National Inventions Council 1947– . Instructor to Professor 1929–47, Professor of Civil Engineering 1947– , Assistant Dean of The Schools of Engineering 1945–51, The George Washington University. Professional Engineer, Maryland, District of Columbia. Member, ASCE, ASEE.

FRANK MARK WEIDA
Professor of Statistics
B.S. 1921, Kenyon College; Ph.D. 1931, State University of Iowa. Instructor, University of Iowa, 1924–26; Assistant Professor, Lehigh University 1926–30; Associate Professor to Professor 1930–35, Professor of Statistics 1935– . Associate Dean, The George Washington University. Member, AAAS, Math. Soc., Math. Assn., Inst. Math. Stat., Stat. Assn., Philosophical Society of Washington, Washington Academy of Sciences.

RICHARD HENRY WELLES
Lecturer in Civil Engineering
B.C.E. 1942, The George Washington University. Civil Engineer, Bureau of Yards and Docks, Department of the Navy 1942– . Lecturer in Civil Engineering, The George Washington University 1957– .

THE ADVISORY COUNCIL

ALLEN VARLEY ASTIN, Ph.D.
Director of the National Bureau of Standards

LYMAN JAMES BRIGGS, Ph.D., Sc.D., LL.D.
Trustee of the University

HUGH LATIMER DRYDEN, Ph.D., Sc.D., D.Eng.
Director of Research of the National Advisory Committee for Aeronautics

RALPH LEON GOETZENBERGER, B.S., E.E.
Vice-President of the Minneapolis-Honeywell Regulator Company

CHARLES HOOD TOMPKINS, D.Eng.
President of the Charles H. Tompkins Company, Trustee of the University

DANIEL CHARLES WALSER, B.S.
Registration Engineer, Member, Chairman of the District of Columbia Board of Registration for Professional Engineers

The Council is made up of friends of the University who are intimately concerned with the educational needs of the professional community served by the School. The Council is advisory to the Dean of the School of Engineering; it serves the function of relating the School to the educational requirements of the engineering and scientific constituency served by the School.

Student Assistants 1955–56

Civil Engineering.—Joseph Bell, Melvin Michael Brady, Herbert Burgoyne, Sami Khalil Jabbour, John McAlinden, Liliana Roski, James Franklin Saunders, Jr., Michael Sileo, William Clark Stamper.

Electrical Engineering.—Melvin Michael Brady, Warren Crockett, Joseph Greblunas, Robert Hermann, Derrill Conway Rohlfs.

Mechanical Engineering.—Coe Anderson, Charles Michael Bennett, Jayant Kamat, Joseph Mast, Kenneth Wayne Scott, Victor Roy Yurow.

Administrative Staff

Jane McMullan, A.B., *Secretary to the Dean*
Dorothy Georgette Drake, A.B., *Clerk-Typist*
Maxie Luise Sacks, *Clerk-Typist*

COMMITTEES*

The Dean's Council†

1957

Ernest Frank
Raymond Pugh Eyman

1958

James Henry Taylor
Robert Aaron Hechtman

1959

Jack Edward Walters
Lewis Slack

Committee on Admissions and Advanced Standing

Benjamin Carpenter Cruickshanks, *Chairman*
Robert Aaron Hechtman
Ernest Frank

Committee on Scholarship

The Dean of the School, *Chairman*
James Henry Taylor
Carl Hugo Walther
Benjamin Carpenter Cruickshanks
Robert Aaron Hechtman
Ernest Frank

Committee on Graduate Studies

The Dean of the School, *Chairman*
Richard Norman Owens
Carl Hugo Walther
Robert Aaron Hechtman
Ernest Frank
Keith Harder (Liaison Member)
James Henry Taylor
Jack Edward Walters
Glen Darwin Camp
William Walter Balwanz
Richard Wylde (Liaison Member)

* The President of the University and the Dean of the School of Engineering are members of all committees.

† Elected by the Faculty

GENERAL INFORMATION

INTRODUCTORY

The School of Engineering was organized October 1, 1884 as the Corcoran Scientific School of Columbian College and was situated in the University Building then at 15th and H Streets, NW. The school was named in honor of William W. Corcoran, Trustee and President of the Corporation from 1869 to 1888. Day and evening courses were offered in Literature, Science, and Technology and led to the degrees of Bachelor of Science, Civil Engineer, Mechanical Engineer, and Mining Engineer. The School was among the first to accept women for degree candidacy in engineering.

In 1902 the Corcoran Scientific School, the School of Graduate Studies, and the Columbian College were merged into a single Department of Arts and Sciences. Engineering degrees were made graduate in character and the student was required to hold a Bachelor of Science degree as a prerequisite to entrance. An indication of the developing character of the School is found in the entrance requirements which stated that "The candidate must give evidence he has completed a liberal undergraduate course—which was of such character as to fit him to pursue to advantage the study of advanced engineering subjects".

Administrative changes led to The Washington College of Engineering being initiated in 1905 as one of the several semi-independent undergraduate colleges of the University, each with its own Board of Trustees. The College provided instruction leading to undergraduate degrees in engineering and architecture.

In 1909 the name of the College was changed to the College of Engineering and Mechanic Arts, and the curricula were revised to give the student a thorough understanding of the theory underlying engineering practice. Emphasis was placed on the development of a knowledge of scientific principles upon which the student could build and by which he might solve new problems as they are met in practice.

The name of the school was changed again in 1914 to the College of Engineering and later to the School of Engineering. Architecture was omitted from the curriculum and degrees were limited to the field of engineering. However, the primary emphasis upon principles rather than technology which had characterized the School since 1902 was continued and has remained to this day as one of the important distinguishing features of the School.

It has become traditional in the School of Engineering to maintain an intimate relationship between the students and the modern practices of engineering by including among the staff of instruction practicing engineers familiar with the latest problems and procedures of engineering science. The instructors participating in this plan bring to the student a

direct contact with the practice of engineering and help to insure an effective balance of instruction between the principles of engineering and application of the principles to the many new problems confronting engineers today.

The courses of instruction are open to both men and women, continuing the practice first initiated in 1884.

Objective

The objective of the School of Engineering is to produce graduates who possess knowledge and understanding of the fundamental scientific principles in their fields of study; some skill in their application; and an attitude of responsibility toward society and the engineering profession.

Programs of Study

Programs of undergraduate study are offered leading to the degrees of Bachelor of Civil Engineering, Bachelor of Electrical Engineering, Bachelor of Mechanical Engineering, and Bachelor of Science in Engineering (with optional areas of concentration).

Graduate work is offered under the supervision of the Committee on Graduate Studies, leading to the degrees of Master of Science in Engineering and Master of Engineering Administration.

HOURS OF INSTRUCTION

Courses of instruction are scheduled in the morning, afternoon, and evening. Evening classes are identical with daytime sections of corresponding courses, may be taught by the same instructors, and carry the same amount of credit. By taking the evening and summer classes and extending the time of study beyond the customary four years, a student who is able to give only part of his time to college work may complete a regular course and obtain a degree.

VETERANS EDUCATION

The Office of Veterans Education of The George Washington University operates as a service bureau for veterans interested in studying at the University and acts in a liaison capacity between the University and the Veterans Administration. Here information may be obtained concerning the educational program of the University and the procedure for securing the educational benefits for veterans.

Public Law 550

At least thirty days prior to registration the veteran desiring to attend under this GI Bill should apply to the Veterans Administration, Veterans Benefits Office, Munitions Building, Constitution Avenue at Twentieth Street NW., Washington 25, D. C., for a Certificate of Education and Training, for presentation to the Office of Veterans Education at the time of registration. A photostatic copy of separation papers must accompany the original application for certification.

Vocational Rehabilitation

Disabled veterans desiring vocational rehabilitation under the GI Bill should apply to the Veterans Administration, Veterans Benefits Office, Munitions Building, Constitution Avenue at Twentieth Street NW., Washington 25, D. C., for approval of their training objectives at least sixty days prior to registration.

Admission

Credit for work done in the service schools is granted provided the veteran has not been out of the service for three years or more. To be considered for such credit veterans should submit to the Director of Admissions photostatic copies of their records indicating courses successfully completed with sufficient identification of the course to enable the Admissions Office to locate it in the Guide to Evaluation of Educational Experience in the Armed Forces.

AIR FORCE RESERVE OFFICERS' TRAINING CORPS

Eligibility Requirements

Enrollment in the Division of Air Science is open to all full-time men students and a limited number of women who are at least 14 years of age, citizens of the United States, physically fit, of good character, and candidates for Bachelor's degrees. Men and women enrolled in Air Force ROTC are designated Cadets and Cadettes, respectively. Cadets who successfully complete the basic course or have equivalent active military training may be selected to enter the advanced course. Cadets in the advanced course receive from the Government a subsistence allowance of approximately $500, which is exempt from income tax. During the period of summer training the advanced cadet receives, in addition, $75 a month, plus food, lodging, and travel expense. Uniforms, textbooks, and training materials are provided for all Air Science courses.

A cadet enrolling in the basic course must agree to successfully complete the two-year course as a prerequisite to graduation from the Uni-

versity. A cadet applying for enrollment in the advanced course must, if selected, sign a contract to complete the course as a prerequisite to graduation; attend a four- to six-week summer training unit; and fulfill all the obligations conjunctive with military service delay specified below.

A limited number of women may enter the advanced course and, upon successful completion thereof, may be considered for commissions as officers in the United States Air Force Reserve.

Military Service Delay

Deferment from induction under the Selective Service Act of 1951 may be granted to selected cadets within authorized quotas. Normally, a cadet is not considered for draft deferment until he has completed one semester's work in the University, with a quality-point index of at least 2.00. A cadet's deferment is subject to withdrawal if his quality-point index falls below 2.00.

The Air Force Reserve Officers' Training Corps (Air Force ROTC) unit was established at the University in 1951 under authority of Section 40-47C, National Defense Act of June 3, 1916, as amended. Air Force personnel, approved by the President of the University, are detailed by the Department of the Air Force to supervise and instruct the Air Force ROTC cadets.

The mission of the Air Force ROTC program is to select and prepare students through a permanent program of instruction to serve as commissioned officers in the Regular and Reserve components of the United States Air Force. Classroom instruction and leadership training is provided to develop in the student the knowledge and the attributes of character, personality, and leadership required of officers in the United States Air Force. Emphasis is placed on arousing in the student a desire to serve his country as a flying officer.

HEALTH ADMINISTRATION

The University maintains a health service that is primarily diagnostic in its intent. For medical emergencies and health consultations there is on the Campus, a Student Health Clinic open from 9:00 A.M. to 5:00 P.M., with physician and nurse in attendance. There is also a rest room for women, with a graduate nurse in charge.

Medical privileges include: (1) the physical examination of every student entering from secondary school; (2) three visits by the University physician or surgeon, office or residence (District of Columbia), in any one illness, exclusive of a specialist, surgical operation, laboratory, or X-ray examination; (3) hospitalization, including board and nursing in the University Hospital for not more than one week during any twelve month period—the necessity to be determined by the Director of Health

Administration. The duration of hospitalization period (maximum, one week) is also to be determined by the Director of Health Administration.

This medical benefit does not apply to illness or disability incurred previous to the University term or prior to payment of tuition fees.

The student is allowed if he so desires, to engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

Rules: (1) The Director of Health Administration is empowered to limit or deny the medical benefits where, in his discretion, a student has, by his misconduct or breach of the rules of the University, made himself ineligible; (2) the Director of Health Administration has authority to determine the necessity and length of hospitalization; (3) a student who has severed his connection with the University is ineligible for medical benefits; (4) a student intending to train for an athletic team is required to pass a thorough examination at the beginning of each semester; (5) the above regulations apply also during the summer term of the University.

The University is not responsible for injuries received in inter-collegiate or intra-mural games, or in any of the activities of the departments of physical education.

LIVING ACCOMMODATIONS

Women Students.—The Hattie M. Strong Residence Hall provides single rooms at $35 a month and double rooms at $30 a month a person. Meals are served at the Student Union. Admission to the University does not include dormitory reservation. A separate application for a room should be made well in advance (for the fall semester by May first, for the spring semester by January first). Forms for application, together with detailed information, may be obtained from the Director of Activities for Women.

Girls under the age of twenty-one who are enrolled for twelve or more semester hours of academic work in the University and who are not living with their parents or relatives may live outside the dormitory only with the permission and approval of the Director of Activities for Women, upon receipt of written requests from parents. In no case will permission be granted for such girls to be domiciled outside the dormitory except with persons approved by the Director of Activities for Women.

Men Students.—Welling Hall provides double room facilities for 102 students. Rooms rent for $24 a month a person. Dining facilities are available to all residents. Meals are served at the Student Union. Application forms for room reservation may be obtained from the Director of Activities for Men.

Information concerning private rooming and boarding facilities near the University, for women students twenty-one years of age or older and for men students, may be obtained at the Housing Office, Lisner Auditorium. The reservation of rooms in private houses must be made by students.

RELIGIOUS LIFE

The University recognizes the contribution that religion can make to the education of its students by encouraging them to participate in denominational clubs of their own choice. National Catholic, Jewish, and Protestant bodies sponsor these religious organizations, which act as links between the University and the local churches. The Director of the University Chapel and the advisers to the various denominational organizations are available throughout the year for consultation on personal problems.

UNIVERSITY CHAPEL

The University Chapel is maintained as a non-sectarian expression of the faith of the University in the contribution that religion can make to the education of its students. Twenty-minute services are held Wednesday of each week at 12:10 P.M. Representative clergymen of Washington are guest speakers at these non-denominational services.

STUDENT PLACEMENT OFFICE

The Student Placement Office, 2114 G Street NW., provides assistance to students and alumni seeking full- and part-time employment. This office maintains a registry of positions locally and nationally available, and refers qualified applicants for consideration. Information is also available on Civil Service examinations.

VOCATIONAL COUNSELING

The University Testing Center is at 2114 G Street NW. The Center offers educational and vocational testing and counseling service. This office maintains a file of occupational information and training opportunities.

STUDENT UNION

The Student Union, 2125 G Street NW., is the center for student life. From the cafeteria on the first floor to the reading room on the fourth floor, it is well planned to meet the students' need for meals, study, recreation, and activities. In addition to the recreation lounge and social lounge the Student Union provides office space for the Student Council and for the other major student organizations.

The Student Activities Office, also in the Student Union, has available information concerning the student organizations and campus events.

DAVIS-HODGKINS HOUSE

The Davis-Hodgkins House, 731 Twenty-second Street NW., is the engineering student center, providing lounges, reading rooms, and student organization offices. The House provides convenient, comfortable facilities for the exchange of ideas and good fellowship among student engineers.

INTERNATIONAL HOUSE

The International House, 2116 G Street NW., is the social center for students from foreign countries. A series of teas, dances, and other forms of entertainment, and the use of club rooms and lounge enable students to become acquainted and feel at home in the University.

The International Students Society welcomes as members students from other lands as well as North American students.

The Adviser to Students from Foreign Countries, whose office is in International House, is available for advice and guidance.

STUDENT ACTIVITIES

Directors of Student Activities

The University maintains the offices of the Director of Activities for Men and the Director of Activities for Women, for the guidance of students in all nonacademic phases of student life, such as, student activities, social life, and housing. The directors are available for individual counseling concerning personal adjustment to university life.

Student Government

Student Council.—The Student Council is responsible to the Director of Activities for Men and the Director of Activities for Women for the conduct of all student activities. Members of the Council are elected annually.

Committee on Student Life.—The Committee on Student Life is the judicial branch of the student government. It is composed of not more than seven members of the faculty, two of whom are the Director of Activities for Men and the Director of Activities for Women, appointed by the President of the University, and the following members: President of Student Council, an Editor of the *Hatchet*, President of Mortar Board, President of Omicron Delta Kappa, President of the Interfraternity Council, and President of Panhellenic Council. This Committee has the power to review the acts of all student organizations, including the Student Council, and set aside acts that are contrary to established policy or regulations of the University or the Committee.

Approval of Student Organizations.—This Committee is granted authority to approve or disapprove the establishment of any proposed organization on campus. No student club or society (except social fraternities, sororities, scholastic honor societies, religious or professional clubs or societies) organized as a branch or affiliate of a non-George Washington University organization will be recognized by the Committee on Student Life.

Eligibility for Student Activities

Any student registered in The George Washington University is eligible to participate in nonathletic student activities of the University; however, a student having a scholastic average of less than 2.00 is not eligible to be:

1 A member of the Dance Production groups, Glee Club, Cheerleaders, Student Council, Religious Council, Panhellenic Council, Inter-fraternity Council, Engineers' Council, Student Life Committee, or any publications staff

2 An officer, permanent committee chairman, or member of the executive board of any activity.

The rules and policies of the Southern Conference govern participation in intercollegiate athletics.

The Engineers' Council

The Engineers' Council is the student governing body for the School of Engineering. It is composed of two elected representatives from each year class, one representative from each student organization in the School of Engineering, the Business Manager of the engineer student magazine, and the House Manager of the Davis-Hodgkins House. The purpose of the Council is to provide liaison between the student body of the School of Engineering and the Faculty, Administration, and Student Government of the University in all matters affecting the general interests and welfare of the student body, the School of Engineering, or the University. The Council is maintained financially by the Engineers' Council Fee paid by each student in the School of Engineering, and sponsors the engineer student magazine, *Mecheleciv*; the Annual Engineers' Mixer, Engineers' Ball, Engineers' Banquet, and the Annual Christmas Tree Ceremony in the University Yard. Council meetings are open to all students in the School of Engineering.

The Council acts as the directing body for *Mecheleciv*, the engineers student magazine. The magazine is published six times a year and is sent free to all engineering students. It includes campus and alumni

news, a calendar of events, news of the student organizations, and articles on engineering by students and faculty members. The magazine is published by a student Board of Editors and a volunteer student staff.

The control and administration of all student activities are outlined in a separate bulletin.

STUDENT ORGANIZATIONS

Honor Societies

Sigma Xi.—A national scientific honor society, the purpose of which is to encourage original investigation in science pure and applied. Outstanding graduate students in the sciences are eligible for full membership, and undergraduates who have shown marked ability in research may be elected to associate membership.

Omicron Delta Kappa.—A national fraternity emphasizing leadership in extracurricular activities.

Phi Eta Sigma.—A national fraternity, established to encourage and reward high scholarship and attainment, membership in which is limited to those freshman men who attain a scholastic average of at least 3.50.

Sigma Tau.—A national engineering fraternity, the purpose of which is to recognize scholarship and professional attainment.

Professional Organizations

American Society of Civil Engineers (Student Chapter).—Membership open to students who are candidates for a civil engineering degree or the degree of Bachelor of Science in Engineering.

American Institute of Electrical Engineers—Institute of Radio Engineers (Student Chapter).—Membership open to candidates for an electrical engineering degree.

American Society of Mechanical Engineers (Student Chapter).—Membership open to candidates for the degree of Bachelor of Mechanical Engineering.

Theta Tau (Gamma Beta Chapter).—A national professional (engineering) fraternity. Membership by invitation to outstanding students who have completed successfully at least the freshman year in the School of Engineering.

Social Fraternities

Sigma Chi, Kappa Sigma, Theta Delta Chi, Phi Sigma Kappa, Sigma Phi Epsilon, Sigma Phi Epsilon, Phi Alpha, Sigma Nu, Acacia, Tau Kappa Epsilon, Pi Kappa Alpha, Tau Epsilon Phi, Alpha Epsilon Pi, Phi Tau Delta, Kappa Alpha.

Social Sororities

Pi Beta Phi, Chi Omega, Sigma Kappa, Alpha Delta Pi, Delta Zeta, Kappa Delta, Phi Sigma Sigma, Zeta Tau Alpha, Kappa Kappa Gamma, Delta Gamma, Kappa Alpha Theta.

Religious Organizations

Baptist Student Union, B'nai B'rith Hillel Foundation, Canterbury Club, Christian Science Organization, Lutheran Student Association, Newman Club, Religious Council, Student Christian Fellowship, Wesley Club, Westminster Foundation.

Musical Organizations

The George Washington University Glee Club, the George Washington University Pep Band.

Student Publications

Amicus Curiae (Law School publication), *The Cherry Tree* (the annual), *The University Hatchet* (weekly newspaper), *The George Washington Law Review*, *Mecheleciv* (engineers' publication), *The Percolator* (pharmaceutical publication).

Other Activities

Alpha Theta Nu (scholarship winners), Big Sisters, Cheerleaders, Colonial Boosters, Fencing Club, Flying Sponsors, Inter-fraternity Council, Inter-fraternity Pledge Council, International Relations Club, International Students' Society, Inter-sorority Athletic Board, Intramural Council, Junior Panhellenic Association, Old Men, Sailing Association, Senior Panhellenic Association, Strong Hall Council, Student Council, The George Washington University Dramatic Activities, Women's Athletic Association, Women's Coordinating Board.

There is a complete program of intramural sports for both men and women.

ADMISSION

The School of Engineering accepts men and women.

Students may enter The School of Engineering at the beginning of the fall semester, the spring semester, or the Summer Sessions.

GENERAL ADMISSION REQUIREMENTS

The following factors are considered in determining the eligibility of an applicant for admission:

1. The adequacy of previous academic work as preparation for the

course of study now contemplated—including quantity and quality of work and the standing of the institution in which it was done.

2. Results of specified tests, when prescribed by the Committee on Admissions.

3. The aptitude of the student for the course contemplated.

4. The character of the student.

The University reserves the right to refuse admission to any student who has a previous academic record of such grade as to create doubt of his ability to pursue college work successfully, or who for any other reason would not be a desirable student.

APPLICATION FOR ADMISSION

An applicant for admission must obtain from the Office of the Director of Admissions an application blank which he must fill out completely and return with the application fee of $3. A recent photograph, with signature, of the applicant must be attached to the blank.

Applications should be filed not later than July 1 for the fall semester, January 1 for the spring semester, and May 1 for the Summer Sessions.

An applicant from a secondary school must send the high school record form provided by the University to his high school principal with the request that the principal fill out the form and mail it *directly* to the Office of the Director of Admissions.

An applicant who has previously attended an institution of higher learning must request the registrar of that institution to mail directly to the Office of the Director of Admissions a transcript of his record. If he has attended more than one such institution he must request the registrar of each institution to send to the Office of the Director of Admissions a transcript of his record, *even though credits were not earned,* together with an honorable dismissal from the institution last attended.

The Graduate Record Examination administered by the Educational Testing Service, Princeton, New Jersey, is accepted as supplemental evidence of the applicant's educational attainment, and the appropriate report should accompany the application for admission whenever available.

METHODS OF ADMISSION

From Secondary Schools

An applicant from a secondary school may seek to qualify for admission by certificate or examination.

By Certificate

A certificate of graduation with a minimum of fifteen "units"* from an accredited secondary school and the recommendation from the prin-

* A unit represents a year's study in a secondary school subject, including in the aggregate not less than 120 sixty-minute periods of prepared classroom work.

cipal of the secondary school that the applicant is prepared to undertake college work will be considered subject to the following conditions:

1. If the school is accredited by the regional accrediting association, the student must rank not lower than the fourth fifth of his class.

2. If the school is not listed by the regional accrediting association, but has been accredited by the state accrediting agency, the student must rank in the upper three fifths of his class.

By College Entrance Board Examinations

An applicant may qualify by passing satisfactorily College Entrance Board examinations as prescribed by the Director of Admissions. These examinations are given at a large number of examination centers throughout the United States, including Washington, D. C., on May 19, August 8, and December 1, 1956; and January 12, March 16, May 18, and August 14, 1957.

Arrangements for the examinations should be made with the College Entrance Examination Board, Post Office Box 592, Princeton, New Jersey, not less than one month before the date of the examinations.

From Higher Institutions*

An applicant for advanced standing may be considered for admission upon the presentation of satisfactory credentials from an accredited institution of higher learning. The student must be in good standing as to scholarship and conduct, and must be eligible to return to the previously attended institution in the semester for which he seeks admission to this University.

If the transcript of record from such an institution includes the record of his secondary school work, it is not necessary for the applicant to have forwarded a separate record directly from the principal of the secondary school. High school work is considered only as fulfilling entrance requirements; it is never credited toward advanced standing.

Properly certified courses taken at accredited colleges or universities may be applied toward a degree at this University, subject to the curriculum requirements and regulations of the school or college to which admission is sought. Work of low pass grade (such as *D* or the equivalent) will not be considered for transfer.

ENTRANCE REQUIREMENTS

Bachelor of Civil Engineering, Bachelor of Electrical Engineering, Bachelor of Mechanical Engineering, Bachelor of Science in Engineering.

* The University reserves the right to refuse advance credit in whole or in part, or to allow it provisionally. Credit so given may be withdrawn for subsequent poor work.

—An acceptable certificate of graduation from an accredited secondary school, or the satisfactory passing of College Entrance Board examinations in secondary school subjects selected with the approval of the Director of Admissions is required.

Nine and one-half of the fifteen units required for entrance must be distributed as follows: three in English, two in algebra, one in plane geometry, one-half in plane trigonometry, one in physics or chemistry, and two in one foreign language or history. A graduate of an approved high school who does not offer for admission the particular subjects required for the engineering curriculum, but who does present not less than fifteen acceptable units, may be admitted on condition, if such deficiency in the distribution of units does not exceed two units.

Advanced standing may be granted for work successfully completed at accredited institutions of higher learning. Credit will be assigned by the School of Engineering to the extent that the work taken at previous institutions meets the requirements for the degree sought at this University, and subject to the general University regulations concerning satisfactory subsequent work.

Master of Science in Engineering.—Applications for admission to candidacy for the degree must be made to the Committee on Graduate Study of the School of Engineering, through the Director of Admissions of the University.

Applicants are required to satisfy the Committee of their capacity for productive study in the discipline and must have acceptable personal qualities. Applicants holding Bachelor's degrees in engineering or physics from recognized institutions and whose record, in the opinion of the Committee, gives evidence of adequate preparation for graduate study may be admitted to candidacy for the graduate degree. Applicants who do not hold a satisfactory degree, or whose adequacy of preparation is questioned may be admitted to candidacy upon successful completion of a qualifying examination prescribed by the Committee.

Study of a graduate character completed prior to application for candidacy for the graduate degree may not be transferred for credit but will be considered by the Committee in determining the applicant's candidacy, provided it contributes substantially to the achievement or mastery of objectives and methods.

Master of Engineering Administration.—Application for admission to candidacy must be made to the Committee on Graduate Studies, through the Director of Admissions of the University.

Applicants are required to satisfy the Committee of their capacity for productive study in the discipline, and must have acceptable personal qualities. To qualify for admission, applicants must hold a Bachelor's degree in engineering or science from a recognized institution; have had appropriate supervisory or administrative experience; and give evidence of

the normal amount provided for in the laboratory fee the individual student will be required to pay such additional charges as are determined by the department concerned.

PAYMENT OF FEES

All fees are payable at the Office of the Cashier, 725 Twenty-first Street NW. No student is permitted to complete registration or to attend classes until all fees are paid. Fees for each semester are due and payable in advance at the time of registration.

In exceptional cases, subject to the approval of the Treasurer, the student may sign a contract for semester charges, except for fees payable in advance, permitting payments as follows:

Fall Semester.—One third at the time of registration; one third on November 5; one third on December 3.

Spring Semester.—One third at the time of registration; one third on March 4; one third on April 3.

A student who fails to meet payments when due, but who pays his fees on or before the fifteenth of the month in which payment is due, is charged a service fee of $1. A student who fails to meet payments by the fifteenth of the month in which payment is due will be automatically suspended and may not attend classes until he has been officially reinstated and has paid all accrued fees and a reinstatement fee of $5.

A student suspended for failure to meet payments when due may not be reinstated for the semester after two weeks from the date of suspension. Applications for reinstatement are to be made to the Office of the Cashier.

An auditor pays all fees chargeable to the student registered for credit except the late-registration fee.

WITHDRAWALS AND REFUNDS

Application for withdrawal from the University or for change in class schedule must be made in person or in writing to the Dean. Notification to an instructor is not an acceptable notice.

A student may not withdraw from either the basic course (2 years) or the advanced course (2 years) of the Air Force ROTC without the approval of the President of the University.

In authorized withdrawals and changes in schedules, financial adjustments will be made as follows:

Fall Semester.—Withdrawal dated on or before October 31, cancellation of two-thirds of tuition charges; withdrawal dated on or before November 30, cancellation of one-third of tuition charges. No refund or reduction will be allowed on a withdrawal dated subsequent to November 30.

Spring Semester.—Withdrawal dated on or before February 28, cancel-

lation of two-thirds of tuition charges; withdrawal dated on or before March 30, cancellation of one-third of tuition charges. No refund or reduction will be allowed on a withdrawal dated subsequent to March 30.

In no case will a refund be made of the first third of the total tuition charges unless the registration is in advance and is cancelled before the regular registration day. In this case a withdrawal fee of $5 is charged and tuition fees refunded. In no case will tuition be reduced or refunded because of nonattendance upon classes.

Payment applies only to the semester for which a registration charge is incurred and in no case will this payment be credited to another semester.

Any student in chemistry who fails to check out of the laboratory on or before the date set by the instructor, unless excused by the instructor, will be charged a checkout fee in the amount of $2. A student who drops a course before the end of the semester must check out of the laboratory at the next regular laboratory period.

Any student enrolled in the Air Force ROTC who fails to turn in uniforms, equipment, and textbooks on separation from the Corps will be charged the value of the missing items.

Authorization to withdraw and certification for work done will not be given a student who has not a clear financial record.

SCHOLARSHIPS, PRIZES, FINANCIAL AID

SCHOLARSHIPS

Scholarships are awarded for the academic year unless otherwise specified and are credited in equal parts for each semester. Each holder must carry the full prescribed schedule during the period for which the scholarship is awarded. Except in the case of the School of Engineering Scholarships, the General Motors College Scholarship, the Eugene and Agnes E. Meyer Scholarships, the National League of Masonic Clubs Scholarship, and the Student Activities Scholarships, the applicants must have established an academic record in courses at this institution, and should apply on prescribed forms which must be filed in the Office of the Chairman of the Committee on Scholarships not later than April 1 preceding the academic year for which the scholarship is to be awarded. Further information may be obtained from the Chairman of the Committee on Scholarships.

School of Engineering Scholarships.—Four scholarships, established in 1951, are available each year in the School of Engineering to graduates of accredited secondary schools. Each scholarship provides full tuition for one year. The holders of these scholarships must carry a full program in the School of Engineering.

Emma K. Carr Scholarships.—Six scholarships in the amount of $400 each and eight of $100 each, established in 1932 by Mrs. Emma K. Carr, are available to "young men (of the white race) for undergraduate or postgraduate work, considering character, capacity, and need".

Henry Harding Carter Scholarship.—This scholarship, in the amount of $500, established in 1896 by Mrs. Maria M. Carter in memory of her husband, Henry Harding Carter, is available to a deserving student who is preparing for the civil-engineering profession.

Maria M. Carter Scholarship.—This scholarship, in the amount of $100, established in 1871 by Mrs. Maria M. Carter, is available to a young man.

Isaac Davis Scholarship.—This scholarship, in the amount of $80, was established in 1869 by the Honorable Isaac Davis of Massachusetts. Nominations for the scholarship may be made "by the founder or his eldest lineal descendant". In case no such nomination is made, the scholarship is to be awarded by the University.

Henry Parsons Erwin Scholarship.—This scholarship, in the amount of $200, established in 1955 by Mrs. Helen B. Erwin as a memorial to her husband, Henry Parsons Erwin, a former Trustee of the University, is available for a student in Engineering.

General Motors College Scholarship.—This scholarship, established in 1955 by General Motors Corporation, is available for an incoming freshman student who is a citizen of the United States and demonstrates outstanding talent, high personal qualifications, and financial need. The amount of the award has been made flexible and will range from an honorary award of $200, up to an award of $2,000 per year, depending upon the demonstrated need of the individual. It is renewable for the four years of undergraduate work, provided the student continues to meet the high standards established for the holder of this award.

Hazelton Scholarship.—This scholarship, in the amount of $350, established in 1950 by the bequest of Lillie S. Hazelton, is awarded annually "for the use and assistance of needy and worthy students".

Eugene and Agnes E. Meyer Scholarships.—A scholarship fund, in the amount of $2,500, established in 1952 by the Eugene and Agnes E. Meyer Foundation, is available annually "to assist promising students or applicants in meeting the costs of furthering their education, with preferential consideration to children of persons who are employed in public service, including service in the armed forces or the judiciary."

David Spencer Scholarship.—This scholarship of $175, established in 1918 by Miss Louisa J. Spencer, is available under certain restrictions.

The Zonta Club of Washington, D. C., Scholarship.—This scholarship, in the amount of $300, offered by the Zonta Club of Washington, D. C., is available to a woman who is a senior or graduate student with special interest in a professional or business career.

The Columbian Women Scholarship Funds

The Columbian Women Scholarships are awarded by the Scholarship Committee of the Columbian Women. Applications for these scholarships should be addressed to the Chairman of the Scholarship Committee, the Columbian Women, The George Washington University, Washington 6, D.C., not later than May 15 preceding the academic year for which the scholarship is to be awarded, or, in the case of award for the spring semester, not later than January 1.

Nellie Maynard Knapp Scholarship Fund.—The income from this fund of $5,000, established in 1915 in memory of a former president, Mrs. Martin A. Knapp, is available for scholarships for women.

Founders of Columbian Women Scholarship Fund.—The income from this fund of $5,000, established in 1929, is available for scholarships.

Lillian Young Herron Scholarship Fund.—The income from this fund of $5,000, established in 1925 and named in 1930 in memory of a former president, is available for scholarships.

College Women's Scholarship Fund.—The income from this fund of $5,000, established in 1926 by the College Women's Club of Washington, D.C., is available for scholarship aid.

Grace Ross Chamberlin Scholarship Fund.—The income from this fund of $2,500, established in 1932 in honor of a former president, is available for scholarship aid.

PRIZES

Alpha Chi Sigma Prizes.—Alpha Pi Chapter of Alpha Chi Sigma Fraternity offers annually the following prizes:

A "Handbook on Chemistry and Physics" is awarded to each of the three students who carry at least eighteen semester hours during the freshman year and attain the highest averages in freshman chemistry.

The name and year of graduation of the student who has attained the highest quality-point index in courses in chemistry will be inscribed on a bronze plaque. The winner must have had at least sixteen hours of chemistry including the final semester at The George Washington University.

Alpha Delta Pi Prize.—Alpha Pi Chapter of Alpha Delta Pi Fraternity offers an annual prize of $10 to the woman member of the junior class with the most outstanding record in scholarship, extra-curricular activities, and service to the University.

American Institute of Chemists Prize.—The District of Columbia Chapter of the American Institute of Chemists offers an annual prize of a social and junior membership in the American Institute of Chemists to that graduating student, majoring in chemistry, who excels in scholarship and in the personal qualities of integrity and leadership.

Byrne Thurtell Burns Memorial Prize.—This prize of $65 is awarded to the senior majoring in chemistry who shows the greatest proficiency in organic chemistry, as evidenced by a comprehensive examination, and who possesses such qualifications of mind, character, and personality as to give promise of future achievement.

Willie E. Fitch Prize.—The Willie E. Fitch Prize of $75, established in 1883 by James E. Fitch, in memory of his son, is awarded annually to a senior student for the best examination in chemistry.

Martin Mahler Prize in Materials Testing.—This prize established in 1953 by Martin Mahler consists of a one-year membership in the American Society for Testing Materials and is awarded to the upper division or graduate student in engineering who submits the best reports on tests in the Materials Laboratories course with preference given to prestressed concrete tests.

Mortar Board Prize.—This prize, consisting of a silver cup, is awarded annually to the woman student in the sophomore class having a scholarship average of *B* or higher and the most outstanding record in activities.

Omicron Delta Kappa Prize.—Alpha Delta Circle of Omicron Delta Kappa Fraternity offers annually a plaque to be awarded to "that member of the senior class who throughout his course has done the most constructive work in the furtherance and upbuilding of the University student activities".

Phi Eta Sigma Prize.—The George Washington University Chapter of Phi Eta Sigma offers annually to the male student attaining the highest scholastic average in his first full semester of work, a choice book selected from the field of the recipient's major interest. The winner's name will be engraved on a plaque in the Office of the Dean of the Junior College.

Phi Sigma Kappa Prize.—Phi Sigma Kappa Fraternity offers annually a silver cup to the winner of an oratorical contest, open to all freshmen.

Pi Beta Phi Prize.—A prize of $20 is awarded annually by the District of Columbia Alpha Chapter of Pi Beta Phi Fraternity to that woman member of the senior class who throughout her college course has done the most constructive work in the promotion of student activities among the women of the University.

Ruggles Prize.—The Ruggles Prize of $35, established by Professor William Ruggles in 1859, is awarded annually to a candidate for a baccalaureate degree for excellence in mathematics.

Sigma Kappa Prize.—Zeta Chapter of Sigma Kappa Sorority offers an annual prize of $10 to the student with the highest grade in the final examination in General Chemistry.

Sigma Tau Prize.—Xi Chapter of Sigma Tau Fraternity offers annually a medal to be awarded to that member of the freshman class in

the School of Engineering who maintains the highest scholastic standing in the work of the entire year.

James MacBride Sterrett, Jr., Prize.—This prize, established in 1911 by Professor James MacBride Sterrett in memory of his son, consists of books awarded annually to that student who obtains the highest average in Physics 6, 7, and 8.

Theta Tau Activities Plaque.—Gamma Beta Chapter of Theta Tau Fraternity offers annually a plaque to be awarded to that member of the senior class who has the most outstanding record in activities in the School of Engineering during the entire period of his attendance.

Alexander Wilbourne Weddell Prize.—This prize of $350, established in 1923 by Mrs. Virginia Chase Weddell, is awarded annually to a candidate for a degree who writes the best essay on the subject of "the promotion of peace among the nations of the world". The prize essays shall become the property of the University and shall not be printed or published without the written consent of the University. The University reserves the right to withhold the award if no essay attaining the required degree of excellence is submitted.

Military Awards

Society of American Military Engineers Gold Medal.—This medal and key, offered by the Society of American Military Engineers, is awarded annually to selected Air Force ROTC cadets in the next-to-last year of their engineering course and in the last year of such course. Nominations are made jointly by the Professor of Air Science and the Dean of the School of Engineering, and final selection is made nationally by a board of three senior Air Force officers.

Armed Forces Communications and Electronics Association Gold Medal Honor Award.—This medal and certificate, offered by the Armed Forces Communications and Electronics Association, are awarded annually to outstanding senior Air Force ROTC cadets majoring in Electrical Engineering who demonstrate outstanding qualities of military leadership and distinguish themselves either academically or by leadership in campus activities.

Air Force Association Silver ROTC Medal.—This medal, offered by the Air Force Association, is awarded annually to that cadet who, after completion of Air Force ROTC summer training, is judged to be the outstanding cadet among those who have indicated their intention to apply for flying training upon graduation.

Reserve Officers' Association Medals.—Gold, silver, and bronze medals, offered by the Reserve Officers' Association of the District of Columbia, are awarded annually to those cadets enrolled in Air Science III, II, and I, respectively, who receive the highest grades for the current year in the leadership and academic phases of the Air Force ROTC course.

Chicago Tribune Gold ROTC Medal.—This medal, offered by *The Chicago Tribune*, is awarded each semester to that cadet enrolled in Air Science IV who has made an outstanding contribution to the effectiveness of the Air Force ROTC program by demonstrating the highest ideals of leadership and scholastic excellence.

Chicago Tribune Silver ROTC Medal.—This medal, offered by *The Chicago Tribune*, is awarded each semester to that cadet of the Air Force ROTC Basic Course who has demonstrated outstanding leadership potential and who has maintained excellent scholastic standing in the University.

Sons of the American Revolution ROTC Medal.—This medal, offered by the District of Columbia Society, Sons of the American Revolution, is awarded annually to that freshman cadet of each Air Force ROTC flight who demonstrates to the maximum degree traits and qualities of good citizenship and meets the prescribed requirements established by the donor.

Unit Leadership Trophy.—This silver trophy, offered by Walter G. Bryte, Jr., Colonel, USAF (Retired), first Professor of Air Science at this University, is awarded annually to the Air Force ROTC flight adjudged best in a competitive review and inspection. The Cadet Commander of this flight is presented a set of engraved Second Lieutenant's insignia.

The Colonial Cadet Rifle Trophy.—This trophy, offered by Master Sergeant Jerome Gleason, USAF, first coach of the Air Force ROTC Rifle Team at this University, is awarded to that cadet who is judged to be the outstanding member of the rifle team.

Arnold Air Society Scroll.—This scroll, offered by the Carl Spaatz Squadron of the Arnold Air Society, is awarded annually to the outstanding cadet completing the basic course with a cumulative average of *B* or better in Air Force ROTC courses.

Pershing Rifles Gold, Silver, and Bronze Achievement Medals.—These medals are awarded annually by the National Headquarters to those Air Force ROTC cadets who are Pershing Riflemen and who are judged to be outstanding examples of the ideals of the Pershing Rifles.

Republic Aviation Award.—This engraved identification bracelet and certificate, offered by the Republic Aviation Corporation, is awarded annually to that cadet enrolled in Air Science III who, in competition, makes the most effective verbal presentation on the Air Power theme.

The Convair Cadet Award.—This award, offered by the Consolidated Vultee Corporation, consists of certificate and a miniature of a Convair airplane. It is awarded annually to that cadet enrolled in Air Science II who achieves the highest cumulative grade in the basic course and who applies for flight training.

Reserve Officers' Association Junior Memberships.—Five junior memberships, offered by the Reserve Officers' Association of the District of

Columbia, are awarded annually to the five Air Force ROTC cadets who obtain the highest grades in Air Science III.

National Rifle Association Club Champion Medal.—This medal, offered by the National Rifle Association, is awarded to a sophomore, junior, or senior member of the Air Force ROTC Rifle Team judged to be the outstanding member of the team based on marksmanship, participation in team matches, and contribution to the effectiveness of the team.

National Rifle Association Qualification Medals.—These medals, offered by the National Rifle Association, are awarded annually to members of the Air Force ROTC Rifle Team qualifying as Expert, Sharpshooter, or Marksman in indoor rifle firing.

Air Force ROTC Rifle Team Awards.—Trophies, plaques, and medals are awarded annually to Air Force ROTC Rifle Teams through successful competition in the following:

The Air Force ROTC Liaison Area Championship Matches
The Army and Area Inter-collegiate and Inter-scholastic Matches
The Secretary of the Air Force ROTC Rifle Match
The William Randolph Hearst National ROTC Rifle Matches.

FINANCIAL AID

Loan Funds

The following loan funds are available to students in the University in accordance with the qualifications placed thereon by the donors. Inquiries should be directed to the Office of the Treasurer.

University Loan Fund.—The Trustees of The George Washington University have established a loan fund of $10,000.

Henry Strong Educational Foundation.—The Henry Strong Educational Foundation, established at Chicago under the will of General Henry Strong, makes available a fund for loans to both men and women students under the age of twenty-five years.

For information concerning full- and part-time employment, see "Student Placement Office", page 26.

REGULATIONS

A student enrolled in the School of Engineering is required to conform to the University regulations and to comply with the rules and regulations of the School of Engineering.

A student who withdraws or is suspended, or is otherwise absent from the University for one semester or more, may re-enter and continue his work only under the rules and regulations in force at the time of his return.

If a student knowingly makes a false statement or conceals material information on an application for admission, registration card, or any other University document, his registration may be canceled and he will be ineligible (except by special action of the Faculty) for subsequent registration in any unit of the University.

ATTENDANCE

A student is not permitted to attend classes until registration has been completed and fees due have been paid. Regular attendance is required. A student may be dropped from any course for undue absence.

A student who has been suspended, either for delinquency in payment of fees or for any other reason, is not permitted to attend classes during the period of suspension.

The student is expected to attend every meeting of the course in which he is registered, fully prepared to carry on the work required. The student is held responsible for all work in the course, and all absences must be excused before provision will be made for him to make up the work missed. Excuses for absences from examinations which have been announced in advance can be obtained only by making written application to the instructor in charge of the course.

AMOUNT OF WORK

Eighteen semester hours, including physical education requirement, constitute normal full-time work. Nine semester hours constitute normal part-time work.

A full-time student who is not on probation may take ordinarily not more than nineteen semester hours. A student employed more than twenty-four hours a week, who is not on probation, may take ordinarily not more than ten hours. A student whose quality-point index is 3.00 or higher may be permitted by the Dean to exceed these limits by not more than two hours.

A student previously unemployed who accepts employment subsequent to registration or at any time during a semester is required to report that fact immediately to the Dean, in order that adjustments in schedule may be made, if necessary, to bring his program within the Faculty's limitations upon the amount of work to be carried by an employed student.

ADVISORY SYSTEM

Every student entering the School of Engineering as a degree candidate is assigned a permanent Faculty adviser—for the purpose of guiding the educational career of the student, providing assistance in his professional development as an engineer, establishing close relations between

the Faculty and the student, and furnishing counsel and advice in all phases of the academic career of the student.

Faculty advisers counsel students on their programs of study, the achievement and maintenance of satisfactory scholastic performance, professional development, extra-curricular activity as part of the educational process; and assist the entering student in orientation in the engineering discipline. The adviser represents the student in all cases requiring Faculty action.

Students who have not completed 72 semester hours satisfactorily are required to obtain their advisers' approval of programs of study prior to registration.

A student who has not completed the course work specified for the freshman and sophomore years is required to consult his adviser when so directed by the Dean, and to follow the recommendations of his adviser in all academic matters. However, advisers may not deny a student entry into any course or activity to which he is entitled under the regulations of the School of Engineering. Students having junior or senior status are encouraged to consult their advisers. The Dean acts as temporary adviser to entering or transfer students pending assignment of their permanent advisers.

All students are encouraged to discuss college problems with their advisers or instructors at any time; and parents or guardians are invited to consult with the Dean and advisers, in respect to any student problems.

Faculty advisers discharge their counseling duties in accordance with the high principles of their professional responsibility; however, in accordance with professional concepts, the final responsibility for a student's action lies wholly with the student.

SCHOLARSHIP REQUIREMENTS

A student who fails to maintain the scholarship requirements of the School of Engineering may be dismissed from the University.

Grades

Grades are not given out by instructors but are mailed to the student through the office of the Registrar at the close of each semester. Upon request, a copy of the student's grades will be forwarded to his parent or guardian.

The following grading system is used: excellent, *A*; good, *B*; average, *C*; passing, *D*; failing, *F*. Whenever a grade has not been assigned, the symbol *Inc.* (incomplete) or the symbol *W* (authorized withdrawal) will be recorded. The symbol *Inc.* is a sign temporarily to indicate that all the required work of the course has not been completed and a satisfac-

tory explanation has been given to the instructor. An "incomplete" can not be made up after the lapse of one calendar year except by permission of the Faculty. Courses from which a student has withdrawn by proper authorization will be indicated by the symbol *W*. No student may repeat for grade a course in which he has received a grade of *D* or above, unless required to do so by the department concerned.

For graduate work, grades are indicated as "excellent", "satisfactory", "unsatisfactory".

Quality-Point Index

Quality points are computed from grades as follows: *A*, four points; *B*, three points; *C*, two points; *D*, one point; *F*, no points, for each semester hour for which the student has registered.

Scholarship is computed in terms of the quality-point index, obtained by dividing the number of quality points by the number of semester hours for which the student has registered, both based on the complete collegiate record. Courses marked *W* or *Inc.*, are not considered in determining the index, except that courses marked *Inc.* will be considered when a formal grade is recorded, or at the close of a calendar year, whichever occurs first. If an "incomplete" is not superseded by a proper grade within the allotted time, it is computed as zero quality points. Grades in courses taken at another institution are not considered in computing the quality-point index. Grades in courses taken to satisfy entrance requirements and in physical education courses are not considered in computing the quality-point index.

Scholarship

In order to graduate, a student must have a general quality-point index of at least 2.00 and, in addition, a quality-point index of at least 2.00 in all work accepted for the degree in the School of Engineering.

Probation.—A student must maintain a quality-point index of at least 2.00, or be placed on probation. A student remains on probation as long as his quality-point index is below 2.00, or until his probation is removed by the Committee on Scholarship.

Probation is imposed for the amount of time required to complete a minimum of twelve additional semester hours or for one semester, whichever is greater. In certain circumstances the period of probation may be extended. A student on probation may not hold office or participate in the activities of any student organization or represent the School in any undergraduate competition. Students placed on scholastic probation are required to complete diagnostic counseling tests and remedial work as required by the Committee on Scholarship before continuing their study in the semester succeeding the one in which they are placed on probation.

Suspension.—A student who has a quality-point index equal to or below 1.00 will be suspended. A student who becomes subject to probation for the third time, whether successive or after an interval, will be suspended.

A student suspended for poor scholarship may apply for readmission after an interval of one calendar year. He must then submit evidence to the Dean's Council that during his absence from the University he has so conducted himself as to indicate that he will profit by readmission. The Dean may require completion of counseling tests and prescribed remedial work before readmission is approved.

A student suspended twice for poor scholarship will not be readmitted.

The foregoing scholarship regulations are applied when a student has completed a minimum of twelve semester hours of work. Thereafter, the regulations are applied in multiples of twelve semester hours.

CHANGES IN PROGRAM OF STUDIES

A student may not change or drop courses or change his status to that of auditor except with the approval of the Dean of the School upon presentation of adequate reasons for such changes.

Change from one section to another of the same course or from one major subject to another within the School may be made with the approval of the Dean. All requirements specified in the course of study to which the change is made must be satisfied before graduation.

Transfer from one college, school, or division to another may be made only with the approval of the deans concerned. Applications for such change should be made on the proper form, obtainable in the Office of the Director of Admissions, where it should be filed.

Withdrawal from a course or from the University, *without academic or financial penalty*, requires the permission of the Dean. Permission to withdraw from the University will not be granted a student who has not a clear financial record.

All charges for courses dropped without the approval of the Dean must be met by the student. Reporting the dropping of a course to an instructor does not effect its discontinuance.

During the seven days following the first day of classes of a semester, additional courses may be added to the student's program with the approval of the instructor, the student's adviser, and the Dean.

During the thirty-five days following the first day of classes of a semester, courses may be dropped from a student's program, with the approval of the student's adviser and the Dean, and without academic penalty. Withdrawal from a course without the approval of the student's adviser entails a penalty of failure in the course.

Withdrawal from a course, without academic penalty, may be authorized by the Dean at any time upon presentation of written evidence of extenuating circumstances.

Unauthorized withdrawal from a course at any time entails a penalty of failure in the course and financial responsibility for the full fee for the course.

CREDIT

Credit toward a degree is given only after regular registration for and satisfactory completion of the required work of classes in the University, or upon the granting of advanced standing in accordance with the regulations of the School.

On request the Registrar will issue to the student a balance sheet showing the amount of work completed and the requirements, both quantitative and qualitative, remaining to be met for the degree.

Transcripts of Record

Official transcripts of student records will be forwarded on request to other institutions. Unofficial copies of records will be issued to the student on request. No charge is made for the first transcript; a fee of one dollar is charged for each one thereafter. No certificate of work done will be issued for a student who does not have a clear financial record.

Summer School Credit

A student who plans to attend summer school sessions at another institution with the intention of having credits so obtained apply toward graduation from this University must first secure the written approval of the dean of his college or school. In no event will such credits be recognized to an amount in excess of that which might be earned in a similar period in this institution.

PHYSICAL EDUCATION REQUIREMENTS

Freshmen and sophomores in the School of Engineering are required to take Physical Education 1–2 and 11–12 unless (1) they are registered for less than 11 semester hours, or (2) regular employment during the day makes it necessary to attend classes during the evening hours, or (3) they are enrolled in the Air Force ROTC, or (4) they are veterans.

Any other exemptions will be granted only upon written petition which has been recommended by the physical education department concerned and approved by the Dean of the School.

A student entering the University with advanced standing is not exempt from the physical education requirements unless he has satisfactorily

met the requirements elsewhere. Courses in military training are not accepted in satisfaction of these requirements.

The required medical and physical examinations, as specified by the departments of physical education, will be arranged at the time of registration.

USE OF CORRECT ENGLISH

Any student whose written or spoken English in any course whatever is deemed unsatisfactory may be reported by the instructor to the Dean's Council. The Council may assign supplementary work, without academic credit, varying in amount with the needs of the student. If the work prescribed is equivalent to a course, the regular tuition fee is charged. The granting of a degree may be delayed for failure to make up any such deficiency in English to the satisfaction of the Dean's Council.

GRADUATION REQUIREMENTS

To be recommended for graduation a student must have met the admission requirement of the School, completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree for which he is registered, and be free from all indebtedness to the University.

Application for Graduation.—Application for a degree should be filed in the Office of the Registrar at the time of registration for the last semester of the senior or final year.

Curriculum.—Curriculum requirements for the Bachelor's degrees are stated on pages 52–58; for the Master's degrees on pages 60 and 61–62.

Graduate Record Examination.—All candidates for Bachelor's degrees are required to take two parts of the Graduate Record Examination in the University's institutional testing program. The examinations are conducted by the University twice a year: the Fall Testing Session (December 8, 1956) for seniors graduating in February, and the Spring Session (April 13, 1957) for those graduating in June or October. Dates of the examinations are announced in the *Schedule of Classes*.

Residence.—For the Bachelor's degrees, a minimum of one year or thirty-six semester hours must be completed in residence. Summer term work may be counted in residence, but in no case may the period of residence aggregate less than thirty weeks. Unless special permission is granted by the Dean to pursue work elsewhere, the work of the senior or final year must be completed in residence.

Attendance and Conduct.—The University reserves the right to refuse to confer a degree upon a candidate whose attendance or conduct has been unsatisfactory.

Comprehensive Problem.—A comprehensive problem submitted in partial satisfaction of requirements for the Master's degree or a professional degree in engineering must be presented in its final form to the Dean not later than the date specified in the University calendar. Three copies of each comprehensive problem are required, one typewritten original and two legible and complete carbon copies. Detailed instructions for the styling of all comprehensive problems should be obtained from the Dean.

Accepted comprehensive problems with accompanying drawings become the property of the University and are deposited in the University Library, where the duplicate copies are bound and made available for circulation. Permission to publish or adapt material in the comprehensive problem must be secured from the Dean.

Presence at Graduation.—A candidate is required to be present at the graduation exercises unless written application for graduation in absentia is approved by the Dean.

Honors

With distinction.—The degree may be conferred "with distinction", at the discretion of the Faculty, if a student attains a quality-point index of 3.50 or higher on all work taken at this institution except that taken during the semester immediately preceding the granting of the degree. To be eligible for this honor a student must have completed at this institution at least one-half of the work required for the degree.

Special honors.—Special honors may be awarded by the Faculty to any member of the graduating class for outstanding achievement in the student's major field of work on recommendation of the major department, under the following regulations:

1. The student must have his candidacy for special honors approved by the faculty members representing the major department or field not later than the beginning of the senior year.

2. The student must meet such other conditions as may be set at the time his candidacy is approved.

3. No student will be awarded special honors unless he has a quality-point index of at least 3.00 on all work taken at this institution except that taken during the semester immediately preceding the granting of the degree.

4. To be eligible for honors a student must have completed at this institution at least one-half of the work required for the degree prior to the beginning of the semester immediately preceding the granting of the degree.

Military honors.—An Air Force ROTC cadet may be designated a "Distinguished Air Force ROTC Cadet" if he (1) has completed Air

Science III with an academic standing among the upper third of the students enrolled therein; (2) has an accumulative academic standing among the upper third of all students in the institution pursuing the same academic major and scheduled to graduate the same school year, or an accumulative academic average of *B* or better; (3) possesses high moral character and definite aptitude for service in the Air Force; (4) has distinguished himself by demonstrated leadership through participation in recognized extracurricular activities and while in attendance at Air Force ROTC. A "Distinguished Air Force ROTC Cadet" is authorized to wear a "Distinguished" badge centered above the right breast pocket of the uniform. He may submit an application for a regular commission in the United States Air Force, which is given final consideration upon his designation as a "Distinguished Air Force ROTC Graduate".

An Air Force ROTC cadet may be designated a "Distinguished Air Force ROTC Graduate" if he has (1) been designated a "Distinguished Air Force ROTC Cadet" and maintained the standards required of a "Distinguished Air Force ROTC Cadet" during the period between designation and graduation; (2) completed the Air Force ROTC Advanced Course; and (3) completed the requirements for the Bachelor's degree. A "Distinguished Air Force ROTC Graduate" will be presented with a certificate signed by the Commandant, Air Force ROTC, and, if he made application, will be considered for a regular commission in the United States Air Force.

THE LIBRARY

A student registered in the University is entitled to the reference use of the University Library. The Student Identification Card, issued upon the payment of fees, must be presented as identification.

The loan period of most books available for home circulation is two weeks, with an additional two-week renewal. A fine of five cents will be charged for each day a book is overdue. Any book which does circulate is subject to recall by the Librarian at any time. Reserve books for collateral reading must be used in the reading rooms when the Library is open. With special permission they may be drawn for overnight use when the Library closes. A fine of twenty-five cents will be charged for the first hour or fraction of an hour and five cents for each hour or fraction thereafter that a reserve book is overdue. Grades of a student will be withheld until his library record is clear.

Hours

The University Library is open from 9:00 A.M. to 10:00 P.M. each class day (Saturday 9:00 A.M. to 5:00 P.M.), and from 2:00 to 6:00 P.M. on Sunday.

RIGHT TO DISMISS STUDENTS

The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable to do so.

RIGHT TO CHANGE RULES

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

PROPERTY RESPONSIBILITY

The University is not responsible for the loss of personal property in any University building. A "Lost and Found" Office is maintained in the Student Union.

THE BACHELOR'S DEGREES

The Bachelor's degrees are: Bachelor of Civil Engineering, Bachelor of Electrical Engineering, Bachelor of Mechanical Engineering, and Bachelor of Science in Engineering.

The degree of Bachelor of Science in Engineering may be earned with any of the following options: Business Administration, Chemistry, Economics, Machine Computer, Mathematics, Physics, or Statistics.

Curricula leading to the degrees of Bachelor of Civil Engineering, Bachelor of Mechanical Engineering, and Bachelor of Electrical Engineering are accredited by the Engineers' Council for Professional Development, the recognized accrediting body of the engineering profession.

Curriculum Requirements

The satisfactory completion of one of the following curricula is required.

Physical Education is required of all students in the freshman and sophomore years. (See "Physical Education Requirements", pages 48-49.)

Variations from the prescribed curricula may be made, with the permission of the Dean's Council. A student desiring to omit a required course and substitute another must make written application to the Dean presenting satisfactory reasons for the substitution; and written approval must be obtained before registration for the course.

A student who is absent from the University for one semester or more (except on national service leave) is required to satisfy the curriculum requirements existing at the time of his return.

FRESHMAN YEAR (FOR ALL ENGINEERING CURRICULA)

		Semester Hours
Chem. 11–12	General Chemistry	8
•Engl. 1, 2	English Composition	6
Math. 12	Analytic Geometry	3
Math. 19	Differential Calculus	3
ME 3	Mechanical Drawing	2
ME 4	Descriptive Geometry	2
ME 5	Organization and Engineering Problems	2
ME 6	Engineering Problems	2
Phys. Ed.	See pages 48–49 for statement of requirement.	
†Phys. 6 and 7	General Physics	6
	Total	34

ROTC—Air Force ROTC students substitute Air Science 1–2 and A (6) for Physical Education 1–2 (2).

SOPHOMORE YEAR (FOR ALL ENGINEERING CURRICULA)

		Semester Hours
Phys. 8	General Physics	3
Phys. 55	Physical Measurements	1
Math. 20	Integral Calculus	3
Math. 103	Calculus and Differential Equations	3
CE 12	Surveying	3
CE 21	Analytical Mechanics: Statics	3
CE 22	Analytical Mechanics: Dynamics	3
EE 11	Fundamentals of Electrical Engineering	3
EE 12	Industrial Machinery	3
Speech 1	Effective Speaking	3
Elective	Approved non-technical elective (for B.C.E., B.E.E., and B.S. in Engr. candidates only)	3
ME 13–14	Mechanism (for B.M.E. candidates only)	6
Phys. Ed.	See pages 48–49 for statement of requirement.	6
	Total	36

ROTC—Air Force ROTC students substitute Air Science 51–52 and A (6) for Physical Education 11–12 (2), Speech 1 (3), and the non-technical elective in all curricula except Mechanical Engineering. Mechanical Engineering candidates replace the non-technical elective with Civil Engineering 12.

Bachelor of Civil Engineering

JUNIOR YEAR

		Semester Hours
CE 123	Strength of Materials	3
CE 125	Engineering Materials	3
CE 127	Soil Mechanics	3

•Those students are registered in English 1, they are tested in the minimum essentials of English composition. Examples: punctuation, usage, and writing skill. Those students who show marked deficiency in these tests will be required to take one or more semesters of Remedial English. Those who are inadequately prepared for English 1 will be required to take English A, for which credit will be given, unless it is used to satisfy entrance requirements.

†Those students who begin Physics with Physics 8 or 7, is subject to a qualifying examination. Credit will be given for Physics 6 or 8 and for entrance requirements.

CE 132	Fluid Mechanics	4
CE 143–44	Structural Theory and Design I and II	6
CE 164	Transportation Engineering	3
ME 111–12	Thermodynamics	6
Phys 132	Electronics	4
EA 185	Engineer and Society	2
*Elective	Non-technical Elective	3
	Total	32

ROTC.—Air Force ROTC students substitute Air Science 101–2 (6) for Elective (3).

SENIOR YEAR

		Semester Hours
Math. 112	Mathematics for Engineers and Scientists	3
CE 135	Hydraulic Engineering	3
CE 138	Sanitary Engineering	3
CE 145	Steel and Timber Structures	4
CE 146	Concrete Theory and Design	3
CE 153	Structural Analysis	3
CE 154	Advanced Dynamics	3
CE 167	Regional and Urban Planning	2
CE 186	Engineering Contracts and Specifications	3
EA 211	Communication of Ideas	6
*Elective	Non-technical Elective	3
	Total	36

ROTC.—Air Force ROTC students substitute Air Science 151–52 (6) for Elective (3).

Bachelor of Electrical Engineering

JUNIOR YEAR

		Semester Hours
EE 107	Alternating Current Circuits	3
EE 109	Alternating Current Machinery	3
EE 110	Communication Engineering	4
EE 111–12	Electrical Measurements	4
EE 113–14	Electric Power Laboratory	6
ME 111–12	Thermodynamics	6
Phys 132	Electronics	4
Econ 1–2	Principles of Economics	6
*Elective		3
	Total	39

ROTC.—Air Force ROTC students substitute Air Science 101–2 (6) for Elective (4).

*Credit is not given for courses elected in Physical Education or Secretarial Studies

	SENIOR YEAR	Semester Hours
CE 123	Strength of Materials	3
CE 132	Fluid Mechanics	4
EE 123–24	Communications Laboratory I and II	4
EE 127	Electric Transients	3
EE 128	Control System Analysis	3
EE 131–32	Electric Power Systems	4
EE 135–36	Field Theory I and II	6
EE 137	Applied Electronics	3
EE 189–90	Proseminar in Electrical Engineering	2
EA 105	Engineer and Society	2
	Total	34

ROTC.—Air Force ROTC students substitute Air Science 151–52 (6) for Electrical Engineering 189–90 (2) and Engineering Administration 105 (2).

Bachelor of Mechanical Engineering

	JUNIOR YEAR	Semester Hours
CE 123	Strength of Materials	3
CE 125	Engineering Materials	3
CE 132	Fluid Mechanics	4
ME 111–12	Thermodynamics	6
ME 141–42	Management Problems	4
Phys 132	Electronics	3
Engin 1–2	Principles of Economics	6
*Elective		6
	Total	35

ROTC.—Air Force ROTC students substitute Air Science 101–2 (6) for Electrical Engineering 151.

	SENIOR YEAR	Semester Hours
ME 115–16	Mechanical Laboratory	4
ME 126	Methods of Manufacture	2
ME 127–28	Machine Design	4
ME 129–30	Power Plants	6
ME 131–32	Heating, Ventilating, Air Conditioning, and Refrigeration	4
ME 133	Combustion Engines	2
ME 139	Fluid Dynamics	3
ME 140	Mechanical Vibrations	3
ME 189–90	Proseminar in Mechanical Engineering	2
*Elective		4
	Total	34

ROTC.—Air Force ROTC students substitute Air Science 151–52 (6) for Electrical Engineering 141.

* Credit is not given for courses elected in Physical Education or Secretarial Studies.

Bachelor of Science in Engineering

JUNIOR YEAR

		Semester Hours
CE 123	Strength of Materials	3
CE 125	Engineering Materials	3
CE 132	Fluid Mechanics	4
CE 180	Engineering Contracts and Specifications	2
ME 111–12	Thermodynamics	6
Phys. 132	Electronics	3
Econ. 1–2	Principles of Economics	6
ME 141–42	Management Problems	4
EA 105	Engineer and Society	2
*Elective		3
	Total	30

ROTC.—Air Force ROTC students substitute Air Science 101–2 (6) for Elective (3).

SENIOR YEAR

Thirty-four semester hours as approved by the department of the option and the Dean of the School of Engineering.

ROTC.—Air Force ROTC students substitute Air Science 151–52 (6) for Elective course (3) as approved by the Dean of the School of Engineering.

The Bachelor of Science in Engineering curriculum provides training in the basic physical principles employed in engineering and in engineering methods of analysis, and in addition, offers an opportunity for study in optional fields in which the student has special interest.

Optional study can be selected from the fields of Business Administration, Chemistry, Economics, Machine Computer, Mathematics, Physics, or Statistics. The program of study in the option is formulated by the department concerned in conference with the student. The program, bearing the approval of the department concerned, must be submitted by the student to the Dean's Council for approval before the beginning of the senior year. During the period of optional study the student must comply with such regulations as the department concerned may prescribe.

The following curricula are recommended, for the guidance of students, by the several departments in which optional study is available. Variations from these curricula to satisfy the exceptional needs of individual students may be made by the department concerned.

* Credit is not given for courses elected in Physical Education or Secretarial Studies

BACHELOR OF SCIENCE IN ENGINEERING OPTIONAL CURRICULA

Business Administration Option

		Semester Hours
Acct. 1–2	Introductory Accounting	6
Bus. Adm. 101	Business Organization and Combination	3
Bus. Adm. 131	Business Finance	3
Bus. Adm. 161	Commercial Law: Contracts, Sales, Agency, and Bailments	3
Elective	Fifteen semester hours to be selected from the following:	
	Acct. 121: Cost Accounting	
	Acct. 111: Financial Statement Analysis	
	Acct. 103: Business Budgeting	
	Bus. Adm. 125: Personnel Management in Industry	
	Bus. Adm. 126: Problems in Personnel Management	
	Bus. Adm. 129: Office Management	
	Bus. Adm. 121: General Insurance	
	Bus. Adm. 141: Principles of Marketing	
	Bus. Adm. 145: Sales Management	
	Bus. Adm. 155: Principles of Purchasing	
	Econ. 121: Money and Banking	
	Econ. 171: Economics of Transportation	
	Econ. 172: Economics of Public Utilities	
	Stat. 111: Business and Economic Statistics	

Chemistry Option

Chem. 21	Qualitative Inorganic Analysis	4
Chem. 22	Quantitative Inorganic Analysis I	4
Chem. 111–12	Physical Chemistry Lectures	6
Chem. 113–14	Physical Chemistry Laboratory	4
Chem. 122	Quantitative Inorganic Analysis II	4
Chem. 185 or 155	Inorganic Chemistry Preparations	
Chem. 151–52	Organic Chemistry: Preparations	2
Elective	Organic Chemistry	8
	Two years of German recommended	12

Economics Option

Econ. 101–2	Economic Analysis	6
Econ. 105	Business Cycles	3
Econ. 121	Money and Banking	3
Econ. 141–42	Labor Economics	6
Stat. 111	Business and Economic Statistics I	3
Stat. 112	Business and Economic Statistics II	3
Elective	Economics, Statistics, or Business Administration Selected with the approval of the Department of Economics	6

Mechanical Engineering Option

(Junior Year)

M.E. 111–12	Thermodynamics	6
C.E. 123	Strength of Materials	3
C.E. 132	Fluid Mechanics	4

EE 107	Alternating-Current Circuits	3
Phys. 132	Electronics	3
Stat. 157–58	Mathematical Statistics	6
Math. 112	Mathematics for Engineers and Scientists	3
Math. 265	Modern Algebra	3
*Elective		6

(Senior Year)

ME 141–42	Management Problems	4
EE 110	Communication Engineering	3
EE 123	Communications Laboratory I	2
EE 137	Applied Electronics	3
EE 171	Modern Computing Machines	3
EE 172	Machine Computer Circuitry	3
Math. 126	Advanced Analytic Geometry	3
Math. 143–44	Numerical Analysis	6
*Elective		6

Mathematics Option

Fifteen semester hours of mathematics beyond calculus, in second- and third-group courses.

Physics Option

Math. 132	Differential Equations	3
Phys. 106	Optics	3
Phys. 113	Atomic Physics	3
Phys. 155 or 156	Advanced Physical Measurements	3
Elective	Six hours to be selected from the following:	
	Physics 102: Heat and Thermodynamics	
	Physics 114: Statistical Physics	
	Physics 118: Introduction to Solid State Physics	
	Physics 121: Nuclear Physics	
	Physics 128: Sound	
	Physics 133: Electronic Circuits	
	Physics 141: Electromagnetic Waves	
	Physics 191: Nuclear Reactors	

Statistics Option

		6
Stat. 91–92	Principles of Statistical Methods	3
Stat. 117	Analysis of Variance	3
Stat. 118	Correlation and the Chi-Square Test	6
Stat. 155–56	Mathematical Probability	6
Stat. 157–58	Mathematical Statistics	

THE MASTER'S DEGREES

The Master's degrees are Master of Science in Engineering and Master of Engineering Administration.

* Credit is not given for courses elected in Physical Education or Secretarial Studies.

THE DEGREE OF MASTER OF SCIENCE IN ENGINEERING

Upon the satisfactory completion of the requirements of the School of Engineering the degree of Master of Science in Engineering is conferred. The discipline of this degree is designed to lead to a mastery of scientific principles and methods as they are applied in engineering. It is conceived that this objective can be served best by providing a relationship in which the intellectual needs and desires of the student are an important element in determining the curriculum. To this end the responsibility for the student's program of study is established in a Committee on Graduate Studies composed of members of the University Faculty and specialists selected from the engineering profession. Programs of study are prescribed for each candidate by the Committee on Graduate Studies or an assigned adviser, in accordance with his state of knowledge and needs, and as required to achieve the objective of mastery of principles and methods. These programs are not curricula common to all candidates for the degree. They may consist of formal courses, independent study, or individual study under assigned faculty, and may include work in several departments and fields of study.

Admission to Candidacy

Application for admission to candidacy for the degree must be submitted to the Office of the Director of Admissions on the form prescribed by that Office. Applicants will be advised by the Committee on Graduate Studies of the time and place of the required personal interview.

Applicants are required to satisfy the Committee of their capacity for productive study in the discipline and must have acceptable personal qualities. Applicants with Bachelor's degrees from recognized institutions, and with records which, in the opinion of the Committee on Graduate Studies gives evidence of adequate preparation for graduate study may be admitted to candidacy for a graduate degree. Applicants who do not have a satistactory Bachelor's degree in engineering, or whose adequacy of preparation is questioned, may be admitted to candidacy upon successful completion of a qualifying examination prescribed by the Committee.

Advanced Standing

Graduate study completed prior to admission to candidacy for the graduate degree in the School of Engineering will not be transferred for credit but will be considered by the Committee on Graduate Studies in prescribing the candidate's program of study provided it contributes substantially to the achievement of mastery of principles and methods. In any case a minimum of one year full-time study must be completed under the Committee on Graduate Studies.

Requirements for the Degree

The candidate for the degree must complete a minimum of one year of full-time study, or the equivalent in part-time study, under the guidance of the Committee on Graduate Studies; complete the program prescribed by that Committee, including course examinations; demonstrate, by passing a comprehensive examination, substantial mastery of scientific principles and methods of their use in the area of his interest; and solve a comprehensive problem. The examination may be written, oral, or both, at the discretion of the Committee.

Candidates with limited areas of unsatisfactory preparation may be required to complete additional necessary remedial or preparatory study.

All of the work applied toward this degree must be accomplished under the guidance of the Committee on Graduate Studies.

Course work applied to satisfy requirements for another degree may not be applied to satisfy requirements for the graduate degree in engineering.

The problem which each candidate is required to solve may be proposed by the student, but it must be approved by the Committee. The candidate is subject to oral examination on his problem at the discretion of the Committee.

With the approval of the Committee on Graduate Studies the candidate may include a thesis in his program. He will be subject to an oral examination on his thesis.

The candidate's scholarship must be satisfactory to the Committee, and will commonly be required to be equivalent to the grade of undergraduate *B*. A student whose work is unsatisfactory will be suspended by the Dean, upon the recommendation of the Committee on Graduate Studies or the student's assigned adviser.

The candidate must complete the requirements for the degree within three years, if he is a full-time student; within five years, if he is a part-time student.

The Degree of Master of Engineering Administration

Upon the satisfactory completion of the requirements of the School of Engineering the degree of Master of Engineering Administration is conferred. The purpose of this program is to offer, through academic study at graduate level, a means of improving the management and administrative ability of government and industrial engineers and scientists.

The objective of this graduate discipline is to develop a mastery of management principles and practices as they apply in the administration of engineering and scientific activities. Knowledge and understanding are sought rather than breadth of familiarity with techniques.

Study programs are prescribed for each candidate, in accordance with his preparation and objective, by the Committee on Graduate Studies. These programs are not curricula common to all candidates for the degree. They may consist of formal courses, independent study, or individual study under assigned faculty, and move freely among departments and fields of study. Each candidate is under the personal guidance of a selected faculty member.

Admisson to Candidacy

Applications for admission to candidacy for the degree must be submitted to the Office of the Director of Admissions on the form prescribed by that Office. Applicants will be advised by the Committee on Graduate Studies of the time and place of the required personal interview.

Applicants are required to satisfy the Committee of their capacity for productive study in the discipline; must have acceptable personal qualities; must hold a Bachelor's degree in engineering or science from a recognized institution; must have had some supervisory or administrative experience; and give evidence of preparation, which in the opinion of the Committee, is adequate for graduate study.

Applicants who lack a satisfactory Bachelor's degree or whose adequacy of preparation is questioned may be admitted to candidacy upon passing qualifying examinations prescribed by the Committee. Applicants lacking satisfactory supervisory or administrative experience may, under certain circumstances, be considered by the Committee.

Advanced Standing

Graduate study completed prior to admission to candidacy for the degree will not be transferred for credit but will be considered in preparing the program of study, provided it contributes substantially to the achievement of the objective of the discipline. In any case a minimum of one year full time study must be completed under the Committee on Graduate Studies.

Study applied to satisfy the requirements for another degree may not be applied toward the degree of Master of Engineering Administration.

Requirements for the Degree

The candidate for the degree of Master of Engineering Administration must successfully complete a minimum of one year full time study, or the equivalent in part-time study, as prescribed by the Committee on Graduate Studies, including course examinations; pass a comprehensive examination on his area of study; and solve a comprehensive problem in engineering administration. At the discretion of the Committee the

examination may be written, oral, or both. Candidates with limited areas of unsatisfactory preparation may be required to complete necessary remedial study in addition to their graduate programs.

The candidate's scholarship must be satisfactory to the Committee, and will commonly be required to be equivalent to the grade of undergraduate *B*. A student whose work is unsatisfactory will be suspended by the Dean upon the recommendation of the Committee or the adviser.

The problem which each candidate is required to solve may be proposed by the student, but it must be approved by the Committee. Its purpose is to demonstrate the candidate's ability to integrate his studies in the solution of a typical administrative problem of a comprehensive nature, requiring for its solution knowledge of a variety of principles and procedures. The candidate is subject to oral examination on his problem at the discretion of the Committee.

The work for the degree, including the comprehensive examination, must be completed within three years by a full-time student, or within five years by a part-time student.

THE PROFESSIONAL DEGREES

The professional degree of Civil Engineer, Electrical Engineer, or Mechanical Engineer may be conferred upon a graduate of the School of Engineering who has demonstrated his professional ability.

Requirements for the Degree

1. Application may not be made sooner than three years after graduation, and then only if the candidate has had definite responsibility for engineering work of substantial importance.

2. A detailed statement of the candidate's experience, references, the degree sought, and the title of the dissertation must be filed with the Dean eight months before the Commencement at which the degree is to be conferred.

Detailed information concerning the preparation of the dissertation may be obtained from the Office of the Dean.

3. The dissertation will be read for acceptance by an examining committee appointed by the Dean to include members of the Faculty of the School of Engineering and at least one expert from engineering practice. The committee will report its recommendation to the Faculty of the School of Engineering.

COURSES OF INSTRUCTION

COURSES OF INSTRUCTION

On the following pages, under the alphabetically arranged names of the departments of instruction, are listed the courses of instruction offered in the School of Engineering. **Also listed are courses offered by** other schools and colleges of the University, but required or accepted as electives for the degrees in engineering. The courses as here listed are subject to some slight change. Students are referred to the *Schedule of Classes*, which is available prior to the opening of each semester, for the hourly scheduling of all courses of instruction.

The University reserves the right to withdraw any course announced.

Indication of the Amount of Credit

The number of semester hours given for the satisfactory completion of a course is, in most cases, indicated in parenthesis after the name of the course. Thus, a year course giving three hours of credit each semester is marked (3-3), and a semester course giving three hours of credit is marked (3). A semester hour usually consists of the completion of one fifty-minute period of class work or of one laboratory period a week for one semester.

CIVIL ENGINEERING

12 *Surveying* (3)

Spring: lecture (2 hours), field work (3 hours)—afternoon, evening, and Saturday.

Principles, methods, and instruments used in making space measurements, including layout, elements of simple curves, coordinate system, and treatment of observational errors. Prerequisite: Mathematics 12 and Mechanical Engineering 4. Surveying fee, $13.

13 *Higher Surveying* (3)

Not offered 1956–57.

Elements of geodesy, triangulation, topography, hydrography, and precise and trigonometric leveling. Prerequisite: Civil Engineering 12. Surveying fee, $13.

14 *Elementary Photogrammetry* (3)

Not offered 1956–57.

Principles, methods, and instruments used in photographic surveying and production of maps; photographic interpretation; principles of stereoscopy. Prerequisite: Civil Engineering 13; Physics 6. Laboratory fee, $11.

21 *Analytical Mechanics: Statics* (3)

Fall—morning and evening; spring—evening.

Free-body diagrams; equilibrium; stresses in simple frames and trusses; analysis of simple members in tension, compression, bending, or torsion; strain and deformation; hydrostatics; friction; centroids and moments of inertia. Prerequisite: Physics 6; prerequisite or concurrent registration: Mathematics 20.

22 *Analytical Mechanics: Dynamics* (3)

Fall—evening; spring—morning and evening.

Kinetic friction; simple kinematics; translation, rotation, and plane motion of rigid bodies; kinematics; work; energy; power; impulse; momentum; impact; simple vibrations. Prerequisite: Civil Engineering 21.

123 *Strength of Materials* (3)

Fall—morning and evening.

Development and application of principles necessary to analyze stresses in and deformation of simple machine and structural components; combined stresses; strain energy; buckling of columns and beams; design of simple members and joints; composite members and simple reinforced concrete columns and beams; theories of failure. Prerequisite: Civil Engineering 22.

125 *Engineering Materials* (3)

Fall—morning and evening.

Mechanical behavior of engineering materials including mechanical testing, elasticity, plasticity, fracture, ductibility, creep, and fatigue; elements of metallurgy and physics of metals. Prerequisite: Chemistry 12; Physics 8; Civil Engineering 21.

127 *Soil Mechanics* (3)

1956–57 and alternate years: fall—afternoon; 1957–58 and alternate years: fall—evening.

A limited study of substructure materials including soils and rocks and their properties as foundation material; seepage; plastic equilibrium; lateral earth pressures, bearing capacity, and settlement. Prerequisite or concurrent registration: Civil Engineering 125.

132 *Fluid Mechanics* (4)

Spring. Lecture—morning and evening, laboratory—afternoon and evening.

Principles of equilibrium, momentum, and the conservation of energy and their applied to the development of the fundamentals of the flow of viscous and ideal incompressible and incompressible fluids, dimensional analysis and model theory. Laboratory work emphasizes experimental investigation, planning and analysis of tests, systematic observation of data, and preparation of reports. Prerequisite: Mechanical Engineering 111 and Civil Engineering 22. Laboratory fee, $11.

135 *Hydraulic Engineering* (3)

1956–57 and alternate years: fall—morning; 1957–58 and alternate years: fall—evening.

Applied fluid mechanics, hydrology, principles of water conservation; introduction to flood control, water power, drainage and irrigation, canalization of rivers, multiple-purpose projects, and general development of water resources. Prerequisite: Civil Engineering 132.

138 *Sanitary Engineering* (3)

1956–57 and alternate years: spring—morning; 1957–58 and alternate years: spring—evening.

Collection, storage, purification, and distribution of water; sewerage systems and treatment of sewage. Prerequisite: Chemistry 12 and Civil Engineering 135.

143–44 *Structural Theory and Design I–II* (3–3)

1956–57 and alternate years: academic year—afternoon; 1957–58 and alternate years: academic year—evening.

Introduction to the structural behavior of statically determinate and indeterminate beams, frames, and trusses, and the application of basic principles to their analysis; moving loads; analysis and design of simple metal, reinforced concrete, and timber structures. Prerequisite or concurrent registration: Civil Engineering 123 and 125.

145 *Steel and Timber Structures* (3)

1956–57 and alternate years: fall—evening; 1957–58 and alternate years: fall—afternoon.

Design of steel and timber buildings, bridges, and details; structural properties of steel and timber. Prerequisite: Civil Engineering 144.

146 *Concrete Theory and Design* (3)

1956–57 and alternate years: spring—evening; 1957–58 and alternate years: spring—afternoon.

Structural properties of plain and reinforced concrete; theory and design of reinforced concrete structures; including laboratory. Prerequisite: Civil Engineering 127 and 144. Laboratory fee, $11.

153 *Structural Analysis* (3)

1956–57 and alternate years: fall—morning; 1957–58 and alternate years: fall—evening.

Further treatment of statically indeterminate structures; introduction to plate theory and elastic instability; numerical and approximate methods of analysis; model analysis. Prerequisite: Civil Engineering 144.

154 *Advanced Dynamics* (3)

1956–57 and alternate years: spring—morning; 1957–58 and alternate years: spring—evening.

Theory of mechanical vibrations; vibrations in and dynamic loading on structures. Prerequisite: Civil Engineering 153.

164 *Transportation Engineering* (3)

1956–57 and alternate years: spring—morning; 1957–58 and alternate years: spring—evening.

Economics, location, construction, operation, and maintenance of transportation systems. Prerequisite: Civil Engineering 12, 125, and 127.

167 *Regional and Urban Planning* (3)

1956–57 and alternate years: fall—evening; 1957–58 and alternate years: fall—morning.

Introduction to regional and urban planning with emphasis on requirements for transportation systems. Prerequisite: Civil Engineering 164

186 *Engineering Contracts and Specifications* (2)

1956–57 and alternate years: spring—evening; 1957–58 and alternate years: spring—morning.

Contract essentials, types, and legal principles; analysis and preparation of specifications. Prerequisite: senior status.

201 *Advanced Mechanics of Materials* (3)

1956–57 and alternate years: fall—evening.

Advanced topics in the mechanics of materials. Stresses at a point, thick cylinders, general binding, torsion, localized stress, and stress concentration.

202 *Applied Elasticity* (3)

1956–57 and alternate years: spring—evening.

The theory of elasticity as applied in three-dimensional analysis of stress, strain, torsion, and bending.

203 *Foundation Problems* (3)

1957–58 and alternate years.

The integration of structural theory and soil mechanics, as applied to foundations, retaining walls, slope stability, and drainage problems. The interrelationship of structural action and soil stability is emphasized.

204 *Theory of Structures* (3)

1957–58 and alternate years.

Advanced analysis and design of indeterminate structures, such as continuous and suspension bridges, high building frames, arches, rigid frames, and columns.

205 *Prestressed Concrete Theory* (3)

1957–58 and alternate years.

A study of the theory and applications of prestressed concrete, including the design of prestressed concrete structures.

ELECTRICAL ENGINEERING

11 *Fundamentals of Electrical Engineering* (3)

Fall—morning and evening.

D-C circuit analysis; electric and magnetic fields; materials; magnetic circuits; magnetic forces and magnetically generated voltages. Prerequisite: Physics 7; prerequisite or concurrent registration: Mathematics 20.

12 *Electric Machinery* (3)

Spring—morning and evening.

Principles of electric-mechanical energy conversion; theory of D-C, synchronous, poly-phase induction and single-phase machines, and transformers. Prerequisite: Electrical Engineering 11.

107 *Alternating-Current Circuits* (3)

Fall—morning and evening.

Theory of linear, lumped-parameter circuits; sinusoidal and non-sinusoidal excitations. Prerequisite: Electrical Engineering 11.

109 *Alternating-Current Machinery* (3)

Fall—morning and evening.

Advanced topics in machine analysis: reaction theory, harmonics, transients and dynamic control properties and unconventional machines. Prerequisite: Electrical Engineering 12; prerequisite or concurrent registration: Electrical Engineering 107.

110 *Communication Engineering* (3)

1956–57 and alternate years: spring—evening.

Theorems and concepts in communication engineering and their application to representative problems. Prerequisite: Electrical Engineering 107.

111–12 *Electrical Measurements* (2–2)

1956–57 and alternate years: academic year—evening; 1957–58 and alternate years: academic year—morning.

Theory of D-C and A-C indicating instruments, bridges, and meters. Prerequisite or concurrent registration: Electrical Engineering 107.

113–14 *Electric Power Laboratory* (2–2)

Academic year—afternoon and evening.

Experiments in D-C and A-C circuits, instruments, and machines. Prerequisite: Electrical Engineering 12. Laboratory fee, $11 a semester.

123 *Communications Laboratory I* (2)

Fall—afternoon and evening.

A laboratory course associated with Electrical Engineering 110. Prerequisite or concurrent registration: Electrical Engineering 110. Laboratory fee, $11.

124 *Communications Laboratory II* (2)

Spring—afternoon and evening.

A laboratory course associated with Electrical Engineering 136. Prerequisite or concurrent registration: Electrical Engineering 136. Laboratory fee, $11.

127 *Electric Transients* (3)

1956–57 and alternate years: fall—evening; 1957–58 and alternate years: fall—morning.

Solution of compound, switching, and transition transients by classical methods and by use of the Laplace transform. Prerequisite: Physics 105 or Electrical Engineering 107; Mathematics 103 or 132.

128 *Control System Analysis* (3)

1956–57 and alternate years: spring—evening; 1957–58 and alternate years: spring—morning.

Transient analysis of control systems; transfer functions and analysis of performance; introduction to design of control systems; compensation. Prerequisite: Electrical Engineering 127.

131–32 *Electric Power Systems* (2–2)

1956–57 and alternate years: academic year—morning; 1957–58 and alternate years: academic year—evening.

Theory and application of symmetrical components; transmission lines and electric distribution; system stability and protection. Prerequisite: Electrical Engineering 109.

135 *Field Theory I* (3)

1956–57 and alternate years: fall—evening; 1957–58 and alternate years: fall—morning.

Theory of electromagnetic fields and use of vector analysis. Prerequisite: Electrical Engineering 111; Mathematics 103; Physics 8.

136 *Field Theory II* (3)

1956–57 and alternate years: spring—evening; 1957–58 and alternate years: spring—morning.

Theory of transmission at UHF and VHF, including wave guides and methods of generation at these frequencies. Prerequisite: Electrical Engineering 135; Physics 132.

137 *Applied Electronics* (3)

1956–57 and alternate years: fall—evening; 1957–58 and alternate years: fall—morning.

Illustrative applications of electronic devices; steady-state and transient solutions of active networks with linear elements and the steady-state solution of active networks containing non-linear elements. Prerequisite: Electrical Engineering 110 and 127; Physics 132.

171 *Modern Computing Machines* (3)

Fall—evening.

Introduction to modern computing machines; basic principles, number systems, language, control, programming, types of machines and principles of operation. Prerequisite: Electrical Engineering 107, Statistics 158, and Mathematics 265.

172 *Machine Computer Circuitry* (3)

Spring—evening.

Timing, counting, computer circuits. Relation of mathematical operations to circuitry. Basic storage and switching circuits. Prerequisite: Electrical Engineering 115; Physics 132.

189–90 *Proseminar in Electrical Engineering* (1–1)

Academic year—evening.

Prerequisite: senior status.

201 *Radio Wave Propagation* (3)

1957–58 and alternate years.

Theory of the radiation and propagation of electromagnetic waves in space, with consideration of practical application to radio problems.

202 *Microwave Electronics* (3)

1957–58 and alternate years.

Behavior of vacuum tubes at ultra-high frequencies. Theory and application of microwave oscillators and transmission circuits. Measurement problems.

203 *Operational Analysis of Linear Systems* (3)

1956–57 and alternate years: fall—evening.

Analysis of circuits under steady-state and transient conditions by operational methods. Generality of the circuit concept.

206 *Electronic Circuit Problems* (3)

1956–57 and alternate years: spring—evening.

Analysis and design of low power vacuum tube and transistor circuits; amplifiers, oscillators, detectors, modulators, receivers, counters, timers, theory of measurements, non-linear analysis.

MECHANICAL ENGINEERING

3 *Mechanical Drawing* (2)

Fall: drafting (6 hours)—morning, afternoon, and evening.

Drafting-room fee, $6.

4 *Descriptive Geometry* (2)

Spring: drafting (6 hours)—morning, afternoon, and evening.

Drafting-room fee, $6.

5 *Orientation and Engineering Problems* (2)

Fall—morning and evening; spring—morning and evening.

Open to freshmen only. Orientation in college. Introduction to slide rule, engineering logic and ethics, engineering method of analysis, proper methods of study and work. Simple problems in engineering.

6 *Engineering Problems** (2)

Spring—morning and evening.

Simple engineering problems in statics, dynamics, energy, heat and electricity. Training in reasoning, engineering analysis, and application of mathematics to engineering problems. Prerequisite: Mechanical Engineering 5; removal of all entrance deficiencies in science and mathematics.

13–14 *Mechanism* (3–3)

Academic year: lecture (2 hours), drawing (2 hours)—morning and evening.

Prerequisite: Mathematics 19. Prerequisite or concurrent registration: Mathematics 20. Drawing-room fee, $6 a semester.

111–12 *Thermodynamics* (3–3)

Academic year—morning and evening.

With introductory study of laws of heat transmission. Prerequisite: junior status.

* This course should be completed before the beginning of the sophomore year.

115–16 *Mechanical Laboratory* (2–2)

Academic year: laboratory (6 hours)—afternoon and evening.

Calibration of instruments; calorimetry; testing of prime movers, auxiliaries, combustion engines, and refrigerating machines. Eight-hour power-plant test required. *Mechanical Engineering 115* prerequisite: Mechanical Engineering 112; Electrical Engineering 12. Prerequisite or concurrent registration: Mechanical Engineering 133, 139. *Mechanical Engineering 116* prerequisite: Mechanical Engineering 115. Prerequisite or concurrent registration: Mechanical Engineering 132, 140. Laboratory fee, $11 a semester.

126 *Methods of Manufacture* (2)

1956–57 and alternate years: spring—evening; 1957–58 and alternate years: spring—morning.

Foundry practices, forging, welding, machine tools, inspection, factory processes. Inspection trips required. Prerequisite: Mechanical Engineering 14; Civil Engineering 125.

127–28 *Machine Design* (2–2)

1956–57 and alternate years: academic year—afternoon; 1957–58 and alternate years: academic year—evening.

With stress-analysis computation and design periods (6 hours). Prerequisite: Mechanical Engineering 112; Civil Engineering 125, 132. Drafting-room fee, $6 a semester.

129–30 *Power Plants* (3–3)

1956–57 and alternate years: academic year—morning; 1957–58 and alternate years: academic year—evening.

Study of design, layout, installation, and operation of power plants and equipment, with emphasis on heat transmission and instrumentation. Prerequisite: Mechanical Engineering 112.

131–32 *Heating, Ventilating, Air Conditioning, and Refrigeration* (2–2)

1956–57 and alternate years: academic year—evening; 1957–58 and alternate years: academic year—morning.

Principles and applications. Prerequisite: Mechanical Engineering 112; Civil Engineering 125 and 132.

133 *Combustion Engines* (2)

1956–57 and alternate years: fall—evening; 1957–58 and alternate years: fall—morning.

Study of spark-ignition and compression-ignition engines, combustion, performance, fuels, knock, supercharging, and combustion charts. Inspection trips required. Prerequisite: Mechanical Engineering 112; senior status.

139 *Fluid Dynamics* (3)

1956–57 and alternate years: fall—morning; 1957–58 and alternate years: fall—evening.

Theory and application of fluid dynamics. Prerequisite: Mathematics 103, Mechanical Engineering 112; Civil Engineering 132.

140 *Mechanical Vibrations* (3)

1956–57 and alternate years: spring—morning; 1957–58 and alternate years: spring—evening.

Inertia effects, balancing, vibration phenomena. Prerequisite: Mathematics 103; Mechanical Engineering 14.

141–42 *Management Problems* (2–2)

1956–57 and alternate years: academic year—morning; 1957–58 and alternate years: academic year—evening.

Organization of an industrial enterprise, the handling and training of men. Prerequisite for Mechanical Engineering 142: Mechanical Engineering 141.

189–90 *Proseminar in Mechanical Engineering* (1–1)

Academic year—late afternoon.

Prerequisite for Mechanical Engineering 189: senior status. Prerequisite for Mechanical Engineering 190: Mechanical Engineering 189.

201 *Instrumentation* (3)

1956–57 and alternate years: fall—evening.

Theory of measurement and instrumentation systems. Physical principles involved in research and commercial instrumentation. Design problems.

202 *Advanced Dynamics of Machinery* (3)

1957–58 and alternate years: spring—evening.

Free, damped, and forced vibrations of mechanical systems; the dynamic response of elastic systems. Selected topics in vibration isolation and control.

203 *Advanced Fluid Dynamics* (3)

1957–58 and alternate years: fall—evening.

Advanced dynamics of incompressible and compressible fluids, turbulence, and boundary layer mechanics.

204 *Heat Transfer Thermodynamics* (3)

1956–57 and alternate years: spring—evening.

Advanced problems in compression of gases and liquids; combustion. Heat transfer problems involving radiation, convection, conduction, evaporation, and condensation.

217–18 *Seminar in Engineering* (1–1)
Academic year—as arranged.

ENGINEERING ADMINISTRATION

The School of Engineering also offers the following courses primarily for candidates for the degree of Master of Engineering Administration. Other courses in this program are listed under the departments of Accounting, Business and Public Administration, Geography, and Psychology.

Engineering Administration 105	*Engineer and Society* (2)
Engineering Administration 191	*Engineering Law* (3)
Engineering Administration 205	*Engineer and Society* (3)
Engineering Administration 211–12	*Communication of Ideas* (3–3)
Engineering Administration 251	*Management of Research and Development* (3)
Engineering Administration 252	*Production and Maintenance Management* (3)
Engineering Administration 260	*Managerial Statistics, Quality Control, and Standardization* (3)
Engineering Administration 261	*Economic Analysis in Engineering Planning* (3)
Engineering Administration 271	*Operations Research* (3)
Engineering Administration 272	*Operations Research—Field Work* (3)
Engineering Administration 290	*Problems in Engineering Administration* (3)

REQUIRED AND ELECTIVE COURSES FROM OTHER DEPARTMENTS

On the following pages appears a partial list of courses in other departments of instruction which are closely related to engineering. Some of these courses are prescribed in the several curricula of the School of Engineering; all are recommended as suitable elective subjects for engineering students.

ACCOUNTING

1–2 *Introductory Accounting* (3–3)
Basic principles and procedures underlying accounting records, preparation of work sheets and financial statements, introduction to cost accounting and valuation, and income determination problems.

101 *Cost Accounting* (3)
Theory and purposes of industrial cost accounting; systems of cost control and determination, analysis and interpretation of cost data.

111 *Financial Statement Analysis* (3)
Methods and techniques of preparing, analyzing, and interpreting financial statements. Determination and interpretation of trends and ratios.

193 *Business Budgeting* (3)
Principles, preparation, and administration of a business budget.

AIR SCIENCE

1–2 *Leadership Laboratory—Freshman Year* (1–1)

11–12 *Leadership Laboratory—Sophomore Year* (1–1)

21–22 *Air Science I—Freshman Year* (2–2)

51–52 *Air Science II—Sophomore Year* (2–2)

101–2 *Air Science III—Junior Year* (3–3)

151–52 *Air Science IV—Senior Year* (3–3)

BUSINESS AND PUBLIC ADMINISTRATION

101 *Business Organization and Combination* (3)
Simple and interrelated forms of business enterprise and their control by government.

105 *Personnel Management in Industry* (3)
Organization and work of the personnel department, human relations in business.

106 *Problems in Personnel Management* (3)
Illustrated by cases drawn from business and industry.

109 *Office Management* (3)
Organization and layout of an office, use of office machines and appliances, planning and execution of work, supervision problems.

121 *General Insurance* (3)
Principles of property, life, marine, and casualty insurance; the function of insurance in the economic life of a business and individual.

131 *Business Finance* (3)
Principles of financing business enterprises. Prerequisite: Accounting 1–2.

141 *Principles of Marketing* (3)
Survey of marketing, stressing consumption, retailing, wholesaling, and sales management; entire marketing structure and its relation to the total economy.

145 *Sales Management* (3)
Organization of sales department, sales planning and forecasting, quotas, territories, performance standards, analysis and control of distribution costs. Prerequisite: Business Administration 141.

150 *Principles of Purchasing* (3)
Organization for purchasing, purchasing policies, market relationships, selection of merchandise, purchasing information and records.

161 *Commercial Law: Contracts, Sales, Agency, and Bailments* (3)

CHEMISTRY

11–12 *General Chemistry* (4–4)
Prerequisite, one year of high school algebra. Laboratory fee, $18 a semester. Lecture, laboratory, and recitation. This is a full-year course. Credit is not given for the first half until the second half is completed.

21 *Qualitative Inorganic Analysis* (4)
Prerequisite: Chemistry 12. Laboratory fee, $18. Lecture and laboratory.

22 *Quantitative Inorganic Analysis I* (4)
Prerequisite: Chemistry 21. Laboratory fee, $18. Lecture and laboratory.

111–12 *Physical Chemistry Lectures* (3–3)
Students registering for Chemistry 111–12 must register concurrently for Chemistry 113–14 unless they already have credit for physical chemistry laboratory. This is a full-year course. Credit is not given for the first half until the second half is completed. Prerequisite: Chemistry 22 and 122; Mathematics 21; Physics 8.

113–14 *Physical Chemistry Laboratory* (2–2)
Laboratory to accompany Chemistry 111–12. Students registering for Chemistry 113–14 must register concurrently for Chemistry 111–12 unless they already have credit for lectures in physical chemistry. This is a full-year course. Credit is not given for the first half until the second half is completed. Laboratory fee, $18 a semester.

122 *Quantitative Inorganic Analysis II* (4)
A continuation of Chemistry 22. Prerequisite: Chemistry 22. Laboratory fee, $18. Lecture and laboratory.

135 *Inorganic Chemistry: Preparations* (2)
Prerequisite: Chemistry 152; prerequisite or concurrent registration: Chemistry 111–12 and 113–14. Laboratory fee, $18.

151–52 *Organic Chemistry* (4–4)
Chemistry of the carbon compounds. Prerequisite: Chemistry 21. This is a full-year course. Credit is not given for the first half until the second half is completed. Chemistry 151 laboratory fee, $11. Chemistry 152 laboratory fee, $18. Lecture and laboratory.

155 *Organic Chemistry: Preparations* (2 or 3)
The synthesis of organic compounds and the application of the technique of organic chemistry to the preparation of pure compounds, using larger amounts and greater refinements than in Chemistry 151–52. Prerequisite: Chemistry 22 and 152. Laboratory fee, $10.50 a semester hour.

ECONOMICS*

1–2 *Principles of Economics* (3–3)
Survey of the major economic principles, institutions, and problems in contemporary economic life. Economics 1 is prerequisite to Economics 2.

101–2 *Economic Analysis* (3–3)
Analysis of demand, supply, and commodity pricing; theory of national income determination, pricing of productive services, welfare economics. Economics 101 is prerequisite to Economics 102.

105 *Business Cycles*
Analysis of strategic factors in economic instability, survey of recent business cycle theories.

121 *Money and Banking* (3)
Theory of money, credit, and banking; commercial banking and the Federal Reserve System; other financial institutions; international aspects of money; current financial problems.

141–42 *Labor Economics* (3–3)
Wages, hours, and employment; labor organizations; labor legislation and federal administrative boards.

ENGLISH

1 *English Composition*† (3)
Review of grammar, exercises in composition, readings.

2 *English Composition*† (3)
Exercises in composition, readings. The second semester of the six-hour English Composition course required of all students.

* Economics 1–2 is prerequisite to all other courses in Economics.

† Entering students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those students who show marked superiority upon passing further tests, be exempted from one or both halves of the English Composition course; those who are inadequately prepared for English 1 will be assigned to English A. English 1 is prerequisite to all other courses in English.

11 *The Writing of Reports* (3)
Theory and practice in the writing of technical reports. Prerequisite. English 1, 2.

MATHEMATICS

3 *College Algebra* (3)
Prerequisite: one year each of high school algebra and high school geometry.

6 *Plane Trigonometry* (3)
Prerequisite: two years of high school algebra and one year of high school geometry or Mathematics 3 (or concurrent registration therefor).

12 *Analytic Geometry* (3)
Prerequisite: Mathematics 3 and 6, or two years of high school algebra, one year of high school geometry, and one-half year of high school trigonometry.

19 *Differential Calculus* (3)
Prerequisite: Mathematics 12.

20 *Integral Calculus* (3)
Prerequisite: Mathematics 19.

102 *Fundamental Concepts of Mathematics* • (3)

103 *Calculus and Differential Equations* • (3)

112 *Mathematics for Engineers and Scientists* (3)
Topics from advanced calculus, partial differential equations, vector analysis, and complex variables. Prerequisite: Mathematics 132 or 103.

123 *Theory of Equations* • (3)

125 *Advanced Algebra* • (3)

126 *Advanced Analytic Geometry* • (3)

132 *Differential Equations* • (3)

134 *Introduction to Boundary Value Problems* (3)
Prerequisite: Mathematics 103 or 132.

135–36 *Projective Geometry* • (2–2)
A year course; credit is not given for the first half until the second half is completed.

139 *Advanced Calculus* • (3)

140 *Introduction to Analysis* • (3)

141 *Introduction to Infinite Series* • (3)
Prerequisite: Mathematics 20.

167 *Fourier Series and Spherical Harmonics* (3)
Prerequisite: Mathematics 132.

265–66 *Modern Algebra* (3–3)

PHYSICAL EDUCATION

1–2 *Freshman Physical Education* (1–1)
Locker and towel fee, $4.

11–12 *Sophomore Physical Education* (1–1)
Locker and towel fee, $4.

PHYSICS

5 *General Physics* (3)
Light, heat, force, energy, and the properties of matter. Prerequisite: high school algebra and plane geometry. Material fee, $11. Lecture, laboratory, and recitation.

6 *General Physics* (3)
Mechanics, wave-motion, and sound. Prerequisite: Physics 5*; high school algebra and plane geometry. Material fee, $11. Lecture, laboratory, and recitation.

7 *General Physics* (3)
Elementary electricity and magnetism. Prerequisite: Physics 5*; high school algebra and plane geometry. Material fee, $11. Lecture, laboratory, and recitation.

8 *General Physics* (3)
This course is the fourth in the sequence of courses 5, 6, 7, and 8, and emphasizes the connection between the fundamental principles studied in courses 5, 6, and 7, and the phenomena and theories of modern physics. Topics considered include electromagnetic waves (light, radio, and X rays), atomic and molecular structure, radioactivity, nuclear physics, the quantum theory of matter and radiation, and the elementary particles such as electrons, protons, neutrons, and mesons. Prerequisite: Physics 6 and 7.

55 *Physical Measurements* (3)
Theory and methods of precise measurement. Prerequisite: Physics 6 and 7; Mathematics 19. Material fee, $11. Lecture and laboratory.

101 *Mechanics* (3)
Statics, elasticity, dynamics of solids and fluids, and gravitation. Prerequisite: Physics 6; Mathematics 20.

* This prerequisite may be waived for students who have credit for a high school Physics course which included satisfactory laboratory work, providing they pass the qualifying examination given at the dates specified in the University Calendar. Physics 5, if not used for entrance requirement, may be used for elective credit.

102 *Heat and Thermodynamics* (3)
Fundamental concepts, heat transfer, the laws of thermodynamics with applications to physical systems. Prerequisite: Physics 8; Mathematics 20.

105 *Principles of Electricity* (3)
Elementary d.c. and a.c. circuit theory, electric and magnetic fields, dielectric and magnetic materials, motion of charged particles in electric and magnetic fields. Prerequisite: Physics 8; Mathematics 20.

106 *Optics* (3)
Geometrical optics; elementary theory of wave motions; interference, diffraction, polarization, and dispersion of light; laws of black-body radiation. Prerequisite: Physics 8; Mathematics 20.

111 *Introduction to Modern Physical Theory* (3)
The basic principles of relativity (special and general) and quantum theory, with applications to cosmology and to the structure of matter. Prerequisite: Physics 8, Mathematics 20, or the equivalent.

113 *Atomic Physics* (3)
Properties of elementary particles; interactions with radiation, atomic structure, optical and X-ray spectra, introduction to wave mechanics. Prerequisite: Physics 8, Mathematics 20.

114 *Statistical Physics* (3)
Classical and quantum statistics with emphasis on Maxwell-Boltzmann statistics; applications to kinetic theory of gases, gaseous diffusion, specific heats of gases and solids. Prerequisite: Physics 8; Mathematics 20.

118 *Introduction to Solid State Physics* (3)
Thermal, dielectric, and magnetic properties of solids; superconductivity, electron theory of metals and semiconductors. Prerequisite: Physics 113, Mathematics 20.

123 *Nuclear Physics* (3)
Structure and stability of atomic nuclei, nuclear transformations and reactions, radiation of nuclei, fission. Prerequisite: Physics 113.

128 *Sound* (3)
Production, propagation, and detection of sound waves, vibrations of sounding bodies, acoustic instruments and acoustic measurements. Prerequisite: Physics 8; Mathematics 20.

132 *Electronics* (3)
The phenomena of electron emission from solids, the physical properties of electron tubes, and the principles underlying their basic applications. Prerequisite: Physics 8 and 55, and Physics 105 or Electrical Engineering 10. Material fee, $11.

133 *Electronic Circuits* (3)
A continuation of Physics 132. Includes non-linear operation of electron tubes, the basic radio-frequency applications of electron tubes, and special types of tubes such as klystrons and magnetrons. Lectures and problems. Prerequisite: Physics 132; Electrical Engineering 107.

141 *Electromagnetic Waves* (3)
Electromagnetic theory for light and radio waves, including an introduction to guided waves and cavity resonators. Prerequisite: Physics 105 and Mathematics 132, or the equivalent.

155–56 *Advanced Physical Measurements* (3–3)
Optional programs of experiments in electricity and magnetism, optics, or atomic physics. Corresponding prerequisites are Physics 105, 150, or 113. In addition, Physics 55 is a general prerequisite. Material fee, $11 a semester.

191 *Nuclear Reactors* (3)
Neutron physics: sources of neutrons, neutron reactions, slowing down and diffusion, introduction to transport theory; fission process; reactor types; basic theory of homogeneous and heterogeneous reactors, including specific numerical studies from recent publications. Prerequisite: Physics 8, Mathematics 20.

POLITICAL SCIENCE

1 *Introduction to Government* (3)

9–10 *Government of the United States* (3–3)

SPEECH

1 *Effective Speaking* (3)

STATISTICS

91–92 *Principles of Statistical Methods* (3–3)
A year course; credit is not given for the first half until the second half is completed. Prerequisite: one entrance unit in algebra. Laboratory fee, $5 a semester. Lecture and laboratory.

111 *Business and Economic Statistics I* (3)
Characteristics, various measures of variability, sampling processes, sampling distributions, and simple correlation. Admission by permission of the instructor.

112 *Business and Economic Statistics II* (3)
Multiple and partial correlation, time series analysis, index numbers, business cycles, demand functions, and depreciation schedules. Prerequisite: Statistics 111 or the equivalent.

117 *Analysis of Variance* (3)
Prerequisite: Statistics 91–92.

118 *Correlation and the Chi-Square Test* (3)
Prerequisite: Statistics 91–92.

155–56 *Mathematical Probability* (3–3)
A year course; credit is not given for the first half until the second half is completed. Prerequisite: Mathematics 29 and Statistics 91–92.

157–58 *Mathematical Statistics* (3–3)
A year course; credit is not given for the first half until the second half is completed. Prerequisite or concurrent registration: Statistics 155–56.

ALUMNI AND ALLIED ASSOCIATIONS

THE GENERAL ALUMNI ASSOCIATION

The objects of this Association are to unite the graduates in closer sympathy and to promote the general welfare of the University. The following persons are eligible for *active* membership: graduates of any college, school, or division of the University; holders of honorary degrees from the University; and members of the Board of Trustees and of the Faculty of the University. Any person who has matriculated, who has been in regular attendance for one year, and who has left the University in good standing, is eligible for *associate* membership.

The Alumni Office is situated at 708 Twenty-second Street, Washington 7, D. C. Alumni are urged to keep the office informed of changes of address or occupation and to supply information with regard to their fellow alumni.

THE ENGINEER ALUMNI ASSOCIATION OF THE GEORGE WASHINGTON UNIVERSITY

The Engineer Alumni Association was organized in 1936 and has been affiliated with the General Alumni Association since that time. Its objects are to unite the graduates and Faculty of the School of Engineering in closer fellowship, to promote the general welfare of the School of Engineering and of the University at large, to foster activities of the engineering organizations recognized by the University, and to advance the profession of engineering in general.

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1956-57

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CALENDAR
1956–57

1956

July

S	M	T	W	T	F	S
1	2	3	4	5	6	7
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1957

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July

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August

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December

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CALENDAR OF THE SCHOOL OF EDUCATION
1956–57

Date	Day	Occasion
1956		
FALL SEMESTER:		
Sept. 4–14	Tuesday through Wednesday	Preadvising for all entering students
Sept. 13	Thursday	Orientation assembly for all new students
Sept. 14 and 17	Friday and Monday	Curriculum assembly for all new students*
Sept. 20–22	Thursday through Saturday morning	Registration
Sept. 24	Monday	Academic year begins
Oct. 5	Friday	Thesis subjects of February Master's candidates due
Oct. 12	Friday	Dissertation subjects of June Doctoral candidates due
Oct. 20	Saturday	Fall Convocation
Oct. 26	Friday	Bachelor of Arts activities plans due
Nov. 2	Friday	Meeting of Committee on Graduate Studies
Nov. 3	Saturday	Applications for Doctoral October comprehensive examinations due
Nov. 12	Monday	Veterans' Day. Holiday
Nov. 16	Saturday	Comprehensive examinations for Doctoral candidates.
Nov. 22–24	Thursday through Saturday	Thanksgiving recess
Dec. 1	Saturday	Applications for Doctoral and Master's January comprehensive examinations due
Dec. 20–Jan. 2	Thursday through Wednesday	Christmas recess
1957		
Jan. 3	Thursday	Classes resume
Jan. 12	Saturday	Theses of Master's candidates due Dissertations of February Doctoral candidates due
Jan. 16	Wednesday	Comprehensive examinations for Doctoral and Master's candidates
Jan. 18	Friday	Last day of classes for the fall semester
Jan. 21–25	Monday through Tuesday	Meeting of Committee on Graduate Studies
		Examination period

* All new students are expected to attend one Curriculum Assembly.

CALENDAR OF THE SCHOOL OF EDUCATION—Continued

Date	Day	Occasion
SPRING SEMESTER		
Jan. 31–Feb. 2	Thursday through Saturday morning	Registration
Feb. 4	Monday	Classes resume for the spring semester
Feb. 15	Friday	Thesis subjects for June Master's candidates due
Feb. 22	Friday	Winter Convocation. Holiday
March 4	Monday	Activities plates due from Bachelor of Arts candidates entering the School of Education in February
March 9	Saturday	Dissertation subjects of October Doctoral candidates due
April 11	Thursday	Applications for Doctoral and Master's April comprehensive examinations due
April 12	Friday	Dissertation subjects for February Doctoral candidates due
April 19–24	Friday through Wednesday	Easter recess
April 27	Saturday	Comprehensive examinations for Doctoral and Master's candidates
May 3	Friday	Meeting of Committee on Graduate Studies
		Theses of June Master's candidates due
May 15	Wednesday	Last day of classes for the spring semester
May 22–28	Monday through Tuesday	Examination period
June 2	Sunday	Baccalaureate
June 5	Wednesday	Commencement
SUMMER SESSIONS		
June 10	Monday	Registration and first day of classes of the pre-session and twelve-week session
June 17	Monday	Registration for the eight-week term
June 18	Tuesday	Classes begin for the eight-week term
June 28	Friday	Pre-session ends
July 1	Monday	Registration and first day of classes of the six-week session. Independence Day. Holiday
July 4	Thursday	Applications for Doctoral and Master's July comprehensive examinations due
July 10	Wednesday	

CALENDAR OF THE SCHOOL OF EDUCATION—Continued

Date	Day	Occasion
July 17	Wednesday	Meeting of Committee on Graduate Studies
July 22	Monday	Registration and first day of classes of second half of six- and twelve-week sessions
July 24	Wednesday	Comprehensive examinations for Doctoral and Master's candidates
Aug. 9	Friday	Six-week session ends
Aug. 9	Friday	Eight-week term ends
		Theses of October Master's candidates due
Aug. 16	Friday	Registration and first day of classes of the post-session
Aug. 20	Friday	Dissertations of October Doctoral candidates due
Sept. 19 and 20	Thursday and Friday	Post-session only
		Registration for the fall semester of the academic year 1957–58

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THE SCHOOL OF EDUCATION

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Joseph Henry Krupa, M.S., Ed.D., *Professor of Physical Education for Men*
Calvin Weir Pettit, Ph.D., *Professor of Speech*
Kathryn Mildred Towne, A.M., *Professor of Home Economics*
Elizabeth Burtner, A.M., *Professor of Physical Education for Women*
Ray LaForest Hamon, Ph.D., *Professorial Lecturer in Education*
Charles Edward Bish, A.M., Ed.D., *Professorial Lecturer in Education*
John Frederick Brougher, A.M., Ed.D., *Professorial Lecturer in Education*
Milo Frederick Christiansen, B.S., M.R., *Professorial Lecturer in Physical Education*
Madaline Kinter Remmlein, Ph.D., J.D., *Professorial Lecturer in Education*

• The Dean of the University, the Dean of Faculties of the University, the Dean of the [illegible] of the University, the Director of Admissions of the University, Professors, [illegible] Professors, Assistant Professors, and Instructors constitute the [illegible]

† [illegible] leave spring semester 1946–47
‡ [illegible] leave fall semester 1946–47
[illegible] 1946–47

Joseph Bucol Johnson, A.M., Ed.D., *Professorial Lecturer in Education*
Florence Mary Lumsden, A.M., Ed.D., *Professorial Lecturer in Education*
William Samuel Rumbough, A.M., Ed.D., *Professorial Lecturer in Education*
Howard Odin Johnson, A.M., Ed.D., *Professorial Lecturer in Education*
Homer Kempfer, A.M., Ed.D., *Professorial Lecturer in Education*
Anthony Marinaccio, A.M., Ph.D., *Professorial Lecturer in Education*
Don Carlos Faith, Ph.D., *Associate Professor of Educational Psychology*
Raymond George Hanken, B.S. in P.E., A.M. in Ed., *Associate Professor of Physical Education for Men*
Mildred Hollander Shott, A.M., *Associate Professor of Secretarial Studies*
Anthony Charles LaBue, B.S., Ed.D., *Associate Professor of Education*
Vincent James DeAngelis, B.S. in P.E., A.M. in Ed., *Associate Professor of Physical Education for Men*
Mary Ellen Coleman, A.M., *Assistant Professor of Education; Director of the Reading Clinic*
Eva Mayne Johnson, A.M., *Assistant Professor of Psychology*
Carol Ruth St. Cyr, Ph.D., *Assistant Professor of Education*
William Andrew McCauley, Ed.B., A.M., *Assistant Professor of Education*
Harry Grubb Detwiler, B.S., A.M., *Assistant Professor of Education*
Loretta May Stallings, A.M., *Assistant Professor of Physical Education for Women*
LuVerne Crabtree Walker, A.M., *Lecturer in Education*
Raymond Ray Reed, A.M., *Lecturer in Education*
Eugenia Campbell Nowlin, A.M., *Lecturer in Education*
Grover LaMarr Angel, A.M., Ed.D., *Lecturer in Education*
Eric Foster Rhodes, A.M., *Lecturer in Education*
Hazel Emma Wilson, A.B., B.S., *Lecturer in Education*
Frederick Anderson Indorf, A.M., Ed.D., *Lecturer in Education*
John Carl Lang, A.M., Ed.D., *Lecturer in Education*
Levin Barton Hanigan, B.S., Ed.D., *Lecturer in Education*
Joan Higginson Masterson, B.S. in P.E., *Instructor in Physical Education for Women*
Camille Jacob Craig, B.S. in P.E., A.M. in Ed., *Instructor in Physical Education for Women*

Consultants in Research

Wesley Earl Armstrong, M.S., Ed.D., *Chief for Teacher Education, U. S. Office of Education*
John Robert Ludington, Ph.D., *Specialist in Industrial Arts, U. S. Office of Education*

Francis James Brown, Ph.D., *Staff Associate, American Council on Education*

Field Service Coordinators

Alexander Anderson, A.M., *Assistant Principal Washington-Lee High School, Arlington, Virginia*
Mary Foust Maré, A.M., *Assistant Principal and Dean of Girls, Wakefield Junior-Senior High School, Arlington, Virginia*
Claude Manby Richmond, B.S., A.M. in Ed., *Principal, Stratford Junior High School, Arlington, Virginia*

COMMITTEES*

The Dean's Council†

1957
Don Carlos Faith
Joseph Henry Krupa

1958
Helen Bennett Lawrence
Kathryn Mildred Towne

1959
Calvin Weir Pettit
Anthony Charles LaBue

Committee on Graduate Studies

The Dean of the School, *Chairman*
Mitchell Dreese
Bernice Herman Jarman
Blake Smith Root
Anthony Charles LaBue
Thelma Hunt
Don Carlos Faith
Ralph Windsor Ruffner
Grover LaMarr Angel

Committee on Admission and Advanced Standing

The Dean of the School, *Chairman*
Ruth Harriet Atwell
Harold Griffith Sutton
Bernice Herman Jarman
Frank Mark Weida
Frances Kirkpatrick
Joseph Henry Krupa

Committee on Scholarship

Blake Smith Root, *Chairman*
Helen Bennett Lawrence
Kathryn Mildred Towne
Vincent James DeAngelis

* The President of the University and the Dean of the School of Education are members ex officio of all committees.
† Elected by the Faculty.

GENERAL INFORMATION

INTRODUCTORY

It is the purpose of the School of Education to prepare teachers, supervisors, and administrators for the higher ranges of educational service and to offer opportunities to teachers of experience to extend their education. The School includes the departments of Education, Physical Education, and Home Economics.* It offers both graduate and undergraduate work. Other departments of the University provide general education and subject-matter courses needed for a well-balanced program of teacher education.

The schedule of courses is arranged to meet the convenience of both full-time and part-time students. By attending evening, Saturday, and summer classes, teachers in the schools of the metropolitan Washington area and others within commuting range may complete all the requirements for a degree without giving up their positions.

HISTORICAL DEVELOPMENT

The University began offering professional courses for teachers in 1904–5 and in 1907 it established a Division of Education. In 1909, the Division of Education became the Teachers College which, in its early years, was concerned largely with teacher preparation on the undergraduate level.

In 1928, the Teachers College became the School of Education and greater provision was made for advanced study. Since that time the graduate enrollment has steadily increased with the result that today the School has a considerably larger number of graduate than undergraduate students.

ADVANTAGES OF STUDY IN THE NATION'S CAPITAL

Washington is rich in the resources needed by teachers to supplement classroom instruction. In addition to the library facilities of the University, the Library of Congress, the Library of the Department of Health, Education, and Welfare, and many special collections provide unexcelled opportunities for reading and research. The operation of all branches of the National Government may be observed. Among the art galleries are the National Gallery of Art, the Corcoran Gallery of Art, the Freer Art Gallery, Phillips Memorial Gallery, and the National Museum. The music calendar of Washington is a full one, and includes con-

* The Department of Home Economics offers a curriculum in home-making. Its program is described in a special announcement.

certs by the National Symphony Orchestra, Philadelphia Orchestra, and the Boston Symphony Orchestra. Those interested in science find many resources for study at the National Museum, the National Zoological Park, the United States Botanic Garden, and the Aquarium of the Fish and Wildlife Service, Department of the Interior. Teachers have unique opportunities to become acquainted with the work of the Office of Education, the National Education Association, the American Council on Education, and many other national organizations with headquarters in Washington.

ACADEMIC STATUS

The George Washington University is accredited by the regional accrediting agency, the Middle States Association of Colleges and Secondary Schools. This is important to students who wish to transfer credits from one institution to another.

The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board.

The School of Education is accredited by the National Council for the Accreditation of Teacher Education, is a member of the American Association of Colleges for Teacher Education, and was a charter member of the National Association of Colleges and Departments of Education prior to the merger of that association with others to form the American Association of Colleges for Teacher Education.

THE EDUCATION OF TEACHERS

PROGRAMS LEADING TO THE DEGREE OF BACHELOR OF SCIENCE IN PHYSICAL EDUCATION

Bachelor of Science in Physical Education for Men

There are three curricula leading to this degree. The Single-Major and Subject-Certification Teacher's Curriculum is designed to prepare students for teaching positions in smaller schools where it is necessary to teach an academic subject in addition to physical education. The Single-Major Teacher's Curriculum prepares for the teaching of physical education in the larger schools. The Physical Education and Recreation Curriculum has been planned for those who wish to be prepared to direct programs of recreation in addition to the teaching of physical education.

The following courses, to be taken in the Junior College, are required for admission to the School of Education. Students with deficiencies must make up those deficiencies as prerequisite to the Junior College curriculum.

		Semester Hours
English	English 1, 2	4
Physical Education	1, 2, 11, 12	6 or 8
Science	Biology 1–2 or Zoology 1–2 (Freshman year)	6
Social Studies	History 39–40, 71–72, Political Science 9–10, or Sociology 1–2 (Freshman year)	6
	Economics, History, or Political Science (Sophomore year)	6
Major Prerequisites	Physical Education 43–44, 47; Speech 1 or 11 (Freshman year)	9
	Physical Education 45–46, 49, 50, 58; Psychology 1, 22 (Sophomore year)	18
Elective		7–9
	Total	68

The minimum requirements for this degree are 66 semester hours, distributed as follows:

Single-Major and Subject-Certification Teacher's Curriculum

The minimum requirements for this degree are twenty-one semester hours in education, twenty-four hours in physical education, eighteen hours in an academic teaching field, and three hours in physiology, distributed as follows:

JUNIOR YEAR	Semester Hours
Learning and Teaching	6
Society and the School	6
History and Principles of Physical Education	3
Corrective Physical Education and Physical Examinations	3
Techniques for Teaching Recreational Dance	1
Methods and Practice in Teaching Physical Education Activities	4
Physiology	3
Academic teaching field	7
Total	33

SENIOR YEAR	Semester Hours
Common Teaching Skills	3
Observation and Student Teaching	6–9
Methods and Materials for Teaching Team Sports in Secondary Schools	4
Methods and Materials for Health Education	3
Tests and Measurements in Physical Education	3
Organization and Administration of Physical Education	3
Academic teaching field	11
Total	33

Single-Major Teacher's Course

The minimum requirements for this degree are twenty-one semester hours in education, twenty-eight hours in physical education, three hours in physiology, and fourteen hours of electives:

JUNIOR YEAR	Semester Hours
Learning and Teaching	6
Society and the School	6
History and Principles of Physical Education	3
Techniques for Teaching Recreational Dance	1
Leadership Organization in the Recreational Program	4
Methods and Practice in Teaching Physical Education Activities	4
Methods and Materials for Teaching Team Sports in Secondary Schools	4
Physiology	3
Electives	2
Total	33

SENIOR YEAR	Semester Hours
Common Teaching Skills	3
Observation and Student Teaching	6–9
Corrective Physical Education and Physical Examinations	3
Methods and Materials for Health Education	3
Tests and Measurements in Physical Education	3
Organization and Administration of Physical Education	3
Electives	9–12
Total	33

Physical Education and Recreation Curriculum

The minimum requirements for this curriculum are 66 semester hours, distributed as follows:

JUNIOR YEAR	Semester Hours
Learning and Teaching	3
Society and the School	6
Introduction to Recreation	2
Techniques for Teaching Recreational Dance	1
Leadership Organization in the Intramural Program	4
Methods and Practice in Teaching Physical Education Activities	4
Camp Leadership	1
Recreational Leadership Activities	6
Electives	6
Total	33

SENIOR YEAR	Semester Hours
Common Teaching Skills	3
Observation and Student Teaching	6–9
History and Principles of Physical Education	3
Methods and Materials for Health Education	3
Tests and Measurements in Physical Education	3
Organization and Administration of Physical Education	3
Community Organization for Recreation	3
Administration of Community Recreation Programs	3
Electives	3–6
Total	33

Bachelor of Science in Physical Education for Women

There are three curricula leading to the degree. The Dual-Major Teacher's Curriculum is designed to prepare students for positions in smaller schools where it is necessary to teach an academic subject in addition to Physical Education.

The Single-Major Teacher's Curriculum prepares for the teaching of Physical Education in the larger schools. Within this curriculum there is opportunity for specialization in dance, sports, or correctives.

The Physical Education and Recreation Curriculum has been planned for those who wish to be prepared to direct programs of recreation in addition to teaching Physical Education.

The following courses, to be taken in the Junior College, are required for admission to the School of Education:

		Semester Hours
English	English 1, 2	6
	English 51–52, 71–72, or 91–92	4
Physical Education	1, 3, 11, 12	6 or 8
Science	Biology 1–2 or Zoology 1–2	6
Social Studies	History 39–40, 71–72; Political Science 9–10; or Sociology 1–2	4
Major Prerequisites	Physical Education 43–44 (Freshman year)	16
	Physical Education 49, 50, 51–52, Psychology 1, 22 (Sophomore year)	6 or 8
Academic Electives	(Each year)	6
	Total	

Dual- or Single-Major Teacher's Curriculum

The student desiring to prepare herself to teach another subject in addition to Physical Education for Women may do so by choosing her elective hours from one subject-matter field with the advice of the Dean of the School of Education. Relevant work completed in the Junior College may be counted in this subject-matter field.

JUNIOR YEAR	Semester Hours
Learning and Teaching	6
First Aid and Care of Athletic Injuries	2
Physical Education in the Elementary School	3
History and Principles of Physical Education	3
Supervise Physical Education and Physical Examinations	6
Activities for Teaching Recreational Dance	1
Methods and Materials for Teaching Physical Education Activities in Secondary Schools and Colleges	2
Principles of Teaching Modern Dance	1
Dance Production	1
Camp Leadership	1
Electives	3
Total	32

SENIOR YEAR	Semester Hours
Society and the School	6
Observation and Student Teaching	6–9
Methods and Practice in Teaching Physical Education Activities	4
School and Community Health Programs	3
Methods and Materials for Health Education	3
Tests and Measurements in Physical Education	3
Organization and Administration of Physical Education	3
Electives	3–6
Total	34

Physical Education and Recreation Curriculum

JUNIOR YEAR	Semester Hours
Introduction to Recreation	2
First Aid and Care of Athletic Injuries	2
Physical Education in the Elementary School	3
Supervise Physical Education and Physical Examinations	6
Activities for Teaching Recreational Dance	1
Camp Organization in the Recreational Program	4
Methods and Materials for Teaching Physical Education Activities in Secondary Schools and Colleges	2
Principles of Teaching Modern Dance	1
Dance Production	1
Camp Leadership Activities	6
Electives	3
Total	34

SENIOR YEAR	Semester Hours
Society and the School	6
Observation and Student Teaching	6–9
History and Principles of Physical Education	3
Methods and Practice in Teaching Physical Education Activities	4
Methods and Materials for Health Education	3
Camp Leadership	1
Organization and Administration of Physical Education	3
Community Organization for Recreation	3
Administration of Community Recreation Programs	3
Total	32–35

PROGRAMS LEADING TO THE DEGREE OF BACHELOR OF ARTS IN EDUCATION

Programs leading to the degree of Bachelor of Arts in Education have four main objectives: (1) provision of general educational backgrounds, (2) a functional command of ideas, concepts, knowledges, and **skills in one or more teaching fields,** (3) a mastery of basic professional information and skills adequate for a beginning teacher, and (4) development of attitudes needed for success in teaching. Since the contents of teaching fields differ in scope and complexity, some programs are longer than others in terms of semester hours. None require less than 120 semester hours of satisfactory work, exclusive of required Physical Education.

Normally, 60–64 semester hours of the total requirement are completed in the Junior College of the University or in an equivalent institution elsewhere.

General Education

The general educational backgrounds needed by prospective teachers are obtained through: (1) pre-college education, (2) college courses, (3) work experience, (4) leadership activities, (5) participation in student campus activities, and (6) utilization of off-campus cultural opportunities.

***College course requirements.*—Course requirements depend in part upon the senior high school credits presented for college admission. They are as follows:**

	Semester Hours
ENGLISH	
English 1, 2: English Composition	6
Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those students who show marked superiority may, upon passing further tests, be exempted from one or both semesters of the English Composition course; those who are inadequately prepared for English 1 will be assigned to English A. English 1 is a prerequisite to all other courses in English.	
One of the following survey courses in literature.....	6
English 51–52: Introduction to English Literature	
English 71–72: Introduction to American Literature	
English 91–92: Introduction to European Literature	
FOREIGN LANGUAGES	
French, German, Latin, Russian, or Spanish	12
A student offering for admission four acceptable high school units of a single foreign language, or the equivalent, is not required to take any foreign language. If he offers three units, he must complete the second semester of the second-year college course in the same language. If he offers two units, he must complete the first-year college course and the second year course in the same language. If he offers one unit, he must complete the second semester of the first-year college course and the second year course in the same language.	

PHYSICAL EDUCATION

Physical Education 1–2 and 11–12

A student may be exempted from this requirement if registered for less than three courses or regularly employed during the day.

SCIENCE AND MATHEMATICS

Two semesters of science or mathematics to supplement senior high school courses in these fields and chosen from the following..... 6–8

Biology 1–2: Survey in Biology
Biology 1, 2: Structure and Functions of the Flowering Plant; Survey of the Plant Kingdom
Chemistry 3–4: Survey of Physical Sciences
Chemistry 11–12: General Chemistry
Mathematics 3 and 6: College Algebra, Plane Trigonometry
Mathematics 6 and 12: Plane Trigonometry; Analytic Geometry
Physics 5 and 6, or 6 and 7: General Physics
Zoology 1–2: Introduction to Zoology

SOCIAL STUDIES

History 71–72: The Development of the Civilization of the United States 6
Another Social Science chosen from the following courses..... 6
Economics 1–2: Principles of Economics
Geography 51, 52: Introduction to Geography; World Regions
History 59–4: The Development of European Civilization
Political Science 9–10: Government of the United States
Religion 59–60: History of Religions
Sociology 1–2: Introductory Sociology

A student offering for admission two or more acceptable senior high school units in the Social Studies may be exempted from the second part of this requirement.

OTHER COURSES

Psychology 1: General Psychology 3
Psychology 22: Educational Psychology or
Psychology 29: Child Psychology 3
Speech 1: Effective Speaking or
Speech 11: Training of the Speaking Voice 3

Students who demonstrate marked superiority in Speech may be exempted from this requirement. Such exemption is granted only on the recommendation of the Department of Speech.

Statistics 55: Introduction to Statistics in Psychology and Education 3

ACADEMIC ELECTIVES

Electives may be increased through the various exemptions

Minimum required credits 60

Work experience, leadership activities, participation in student campus activities, and the utilization of off-campus cultural opportunities.—Finally, these cannot be prescribed. Nevertheless, they constitute an important part of the general educational background of prospective teachers for those preparing for elementary school teaching.

teachers. In conference with a staff member of the Department of Education assigned as his general adviser, the student is expected to plan adequate experiences in these areas. Not later than one month after matriculation in the School of Education the student must file in the Office of the Dean a statement of such plans approved by his adviser. He must also keep his adviser informed concerning the fulfillment of his plans and to this end include in plans filed, scheduled conferences with his adviser.

Success of the student in enriching his general educational background by these means will be taken into consideration at the end of the first semester of the junior year when the faculty will review the qualifications of candidates to determine any who are not of sufficient promise as prospective teachers to warrant continuation of their candidacies. Success in these activities will also be considered when the list of candidates is again reviewed early in the last semester of the senior year immediately after the results of the National Teacher Examinations are available. In estimating the success of the student in this connection, more weight will be given to evidence of initiative, eagerness to make the most of each experience, balance, and quality of experience than to the number of different experiences.

Although the student is not required to establish a program of non-academic activities until he becomes a degree candidate in the School of Education, he is advised to do so as soon as he enters the Junior College. To this end, he should consult with the Junior College adviser of students in the pre-Education curriculum soon after entering the Junior College. Whatever is accomplished in this connection while in the Junior College will reduce the obligations of the student after admission to the School of Education.

Teaching-Field Preparation

Teaching-field preparation depends upon the kind of teaching position for which the student is preparing. Those planning to teach in elementary schools need a degree of competency in several fields. Those preparing to teach in junior or senior high schools must demonstrate competency in a major teaching field and a minor teaching field. Ordinarily, students preparing to teach in evening schools for adults are required to prove competency in only one teaching field.

The student should begin teaching-field preparation while in the Junior College and should make provision for it in planning his program of studies.

Teaching-field requirements include satisfactory completion of prescribed academic courses in one or more fields, a satisfactory score on the special field examination of the National Teacher Examinations, and satisfactory completion of the prescribed special methods courses.

Prescribed academic courses vary in number in accordance with the scope and complexity of the teaching field and the license requirements of the various states. Minimum academic course requirements for each major teaching field are listed on succeeding pages. Minor teaching-field requirements are somewhat less than those of a major field. They are determined in conference with an adviser.

The prescribed course in special methods is concerned primarily with methods of initiating, guiding, and evaluating learning experiences dealing with the content of the teaching field. It attempts to bring to the student specific suggestions drawn from the accumulated experience of successful teachers. However, in addition, the course reviews the teaching-field content currently in use in schools and the examination at the end of the course provides the final test of competency in the teaching field.

Prescribed Courses in the Various Teaching Fields

ART

	Semester Hours
Two semester courses from the following group	6
Art 71–72 Introduction to the Arts in America	
Art 139 Nineteenth Century Art in Europe	
Art 140 Contemporary Art	
Art 141 Interior Decoration	
Art 142 Home planning	
Art 161–62 Theory and Criticism	
Two semester courses from the following group	6
Art 131 Ancient Art	
Art 132 Medieval Art	
Art 133 Renaissance Art in Italy	
Art 134 Renaissance Art in the North	
Art 135 Painting Art	
Art 136 Art of the Far East	
Twenty-four semester hours from the following group	24
Art 45–46 Drawing and Painting I—Life and Still Life	
Art 55–56 Drawing and Painting I—Life, Still Life, and Portrait	
Art 57–58 Drawing and Painting I—Life and Portrait	
Art 81–82 Sculpture I	
Art 125–26 Drawing and Painting II—Life, Still Life, and Portrait	
Art 127–28 Drawing and Painting II—Life and Portrait	
Art 135–36 Drawing and Painting II—Life and Portrait	
Art 165–66 Drawing and Painting II—Life and Portrait	
Art 175–76 Drawing and Painting II—Life and Portrait	
Art 177–78 Drawing and Painting II—Life and Portrait	
Art 181–82 Sculpture II	
Art 183–84 Commercial Art	
Total	36

BIOLOGY

	6
Biology 1–2: Survey in Biology	3
Botany 1: Structure and Functions of the Flowering Plant	3
Home Economics 152: Nutrition	3
Physiology 115: Physiology	8
Zoology 1–2: Introduction to Zoology	12
*Additional courses as approved by the adviser	
Total	35

BUSINESS EDUCATION

	3
Accounting 1: Introductory Accounting	6
Economics 1–2: Principles of Economics	3
Secretarial Studies 51: Business Correspondence	
Additional courses as prescribed in *one* of the following groups:	
Group 1—Secretarial Studies	3
Secretarial Studies 2: Intermediate Typewriting	3
Secretarial Studies 12: Intermediate Shorthand and Transcription	8
Secretarial Studies 15: Advanced Shorthand, Typewriting, and Transcription	3
Secretarial Studies 16: Secretarial Shorthand, Typewriting, and Transcription	3
Secretarial Studies 54: Secretarial Practice	6
*Additional courses from the following as approved by the adviser	
Accounting 2: Introductory Accounting	
Business Administration 101: Business Organization and Combination	
Business Administration 109: Office Management	
Business Administration 141: Principles of Marketing	
Business Administration 151: Retailing	
Business Administration 161: Commercial Law	
Economics 121: Money and Banking	
Statistics 52: Mathematics of Finance	33
Total	
Group 2—Bookkeeping, Business Arithmetic, and Business Law	3
Accounting 2: Introductory Accounting	3
Business Administration 101: Business Organization and Combination	3
Business Administration 102: Business Management	6
Business Administration 161–62: Commercial Law	3
Statistics 52: Mathematics of Finance	6
*Two of the following courses as approved by the adviser	
Accounting 111: Financial Statements Analysis	
Business Administration 121: General Insurance	
Business Administration 131: Business Finance	
Business Administration 138: Investments	
Economics 121: Money and Banking	30
Total	

* Not required for the minor.

Group 3—Distributive Education

Business Administration 141:	Principles of Marketing	3
Business Administration 142:	Marketing Problems	3
Business Administration 145:	Sales Management	3
Business Administration 151:	Retailing	3
*Three of the following courses, as approved by the adviser:		12
Business Administration 146:	Sales Management Problems	
Business Administration 147:	Advertising	
Business Administration 152:	Principles of Purchasing	
Business Administration 158:	Traffic Management	
Business Administration 175:	Introduction to Foreign Trade	
Business Administration 176:	Exporting and Importing	
Total		36

CHEMISTRY

Chemistry 11–12:	General Chemistry	8
Chemistry 21:	Qualitative Inorganic Analysis	4
Chemistry 22:	Quantitative Inorganic Analysis	4
Chemistry 151–52:	Organic Chemistry	8
Chemistry 191:	History of Chemistry	2
*One of the following:		8–10
Chemistry 111–12 and 113–14:	Physical Chemistry	
Biochemistry 221–22:	Biochemistry	
Total		34–36

ELEMENTARY EDUCATION

Education 113:	Elementary School Art	3
Education 114:	Elementary School Music	3
[illegible] 118:	Children's Literature	3
[illegible] Education 121:	Physical Education in the Elementary School	3
[illegible] as approved by the adviser		6–14
[illegible]y 71–72:	Development of the Civilization of the United States	6
[illegible] Students selected from the following, as approved by the [illegible]		12
[illegible] 1–2:	Principles of Economics	
[illegible] 51, 52:	Introduction to Comparative World Regions	
[illegible] 73–74:	The Development of European Civilization	
[illegible] 91–92:	Government of the United States	
[illegible] 93–94:	History of Religion	
[illegible] 1–2:	Introductory Sociology	
Total		36–44

ENGLISH

[illegible] 1–2:	English Composition	6
[illegible] 52:	Introduction to English Literature	3
[illegible] 71–72:	Introduction to American Literature	6
[illegible] 145:	The Evolution of Modern Speech	3
*[illegible] for the major:		

English 135–36: Shakespeare	6
Speech 11: Training the Speaking Voice	3
*Three semesters selected from the following, with approval of adviser	9
English 151–52: The Romantic Movement	
English 161–62: Victorian Literature	
English 165–66: The Twentieth Century	
English 171–72: Studies in American Literature	
English 173–74: Major American Poets	
English 176: American Drama	
English 177–78: American Fiction	
English 182: The English Novel	
English 199: Proseminar	
Total	30

FRENCH

French 1–2: First-year French	6
French 3–4: Second-year French	6
French 9–10: French Conversation and Composition	6
French 51–52: Survey of French Literature and Civilization	12
*Additional courses in French as approved by the adviser	
Total	30

GEOGRAPHY

Geography 51: Introduction to Geography	3
Geography 52: World Regions	3
Geography 103–4: Cartography	6
Geography 113: Geomorphology	3
Geography 114: Weather and Climate	3
Geography 151: Economic Geography of the United States	6
Geography 152: Political Geography of the United States	
*Two of the following semester courses	
Geography 183: Northwest Europe	
Geography 184: The Mediterranean	
Geography 191: Middle America	
Geography 192: South America	
Geography 195: Eastern and Southeastern Asia	6
Geography 197: The Pacific	
Geography 198: Australia	
*Two of the following semester courses	
Geography 125: Economic Geography: Trade and Transportation	
Geography 126: Economic Geography: Raw Materials	
Geography 127: Economic Geography: Manufacture	
Geography 128: Economic Geography: Agriculture	
Geography 131: Conservation of Natural Resources	
Geography 132: Land Use	
Geography 141: Geography of Settlement	
Geography 142: Urban Geography	30
Total	

* Not required for the minor

GERMAN

German 1–2: First-year German	6
German 3–4: Second-year German	6
German 51–52: Introduction to German Literature	6
*Additional courses in German, as approved by the adviser	18
Total	36

HISTORY

History 39–40: The Development of European Civilization	6
History 71–72: The Development of the Civilization of the United States	6
Six semester hours, as approved by the adviser, from each of the following groups	18

Group 1—American History
- History 171–72: Social History of the United States
- History 173: Representative Americans
- History 174: Economic History of the United States
- History 181–82: Diplomatic History of the United States

Group 2—European History
- History 109: Thought and Culture of the Western World I: Ancient Civilization
- History 110: Thought and Culture of the Western World II: The Middle Ages and the Renaissance
- History 130: Nationalism
- History 145–46: Russian History
- History 147: Economic History of Europe
- History 149–50: European Diplomatic History
- History 151–52: English History

*Group 3—Latin American History
- History 163: Latin American History—Colonial Period
- History 164: South America since Independence
- History 166: Mexico and the Caribbean since Independence
- Political Science 177: Recent Trends in Latin American Politics and Government
- Political Science 178: International Politics in the Western Hemisphere

*Six semester hours, as approved by the adviser, from one of the foregoing groups 6

Total 36

MATHEMATICS

Mathematics 3: College Algebra	3
Mathematics 6: Plane Trigonometry	3
Mathematics 12: Analytic Geometry	3
Mathematics 19: Differential Calculus	3
Mathematics 20: Integral Calculus	3

*As approved by the major

*Mathematics 123: Theory of Equations, or	
*Mathematics 125: Advanced Algebra	
*Mathematics 132: Differential Equations, or	
*Mathematics 139: Advanced Calculus	
*Additional course in Mathematics, as approved by the adviser	
Statistics 52: Mathematics of Finance	
Total	27

PHYSICS

Physics 5, 6, 7, and 8: General Physics	12
Physics 55: Physical Measurements	3
Physics 101: Mechanics	3
Physics 105: Principles of Electricity	3
Physics 106: Optics	3
*Chemistry Elective—Chemistry 11–12: General Chemistry or Chemistry 12–21: General Chemistry and Qualitative Inorganic Analysis	8
Mathematics 12: Analytic Geometry	3
Mathematics 19: Differential Calculus	3
Mathematics 20: Integral Calculus	3
*Six semester hours to be selected from the following	6
Physics 102: Heat and Thermodynamics	
Physics 113: Atomic Physics	
Physics 114: Statistical Physics	
Physics 128: Sound	
Physics 132: Electronics	
Physics 155–56: Advanced Physical Measurements	
Total	47

SOCIAL STUDIES

History 39–40: The Development of European Civilization	6
History 71–72: The Development of the Civilization of the United States	6
Political Science 9–10: Government of the United States	6
Two of the following courses	12
Economics 1–2: Principles of Economics	
Geography 51, 52: Introduction to Geography and World Regions	
Religion 59–60: History of Religion	
Sociology 1–2: Introductory Sociology	
*Additional second-group courses, as approved by the adviser from one of the following fields: Economics, Geography, History, Political Science, Religion, Sociology	12
Total	42

SPANISH

Spanish 1–2: First-year Spanish	6
Spanish 3–4: Second-year Spanish	6
Spanish 9–10: Spanish Conversation and Composition	6
*Additional courses, as approved by the adviser	18
Total	36

* Not required for the minor

SPEECH

Speech 1: Effective Speaking	3
Speech 2: Persuasive Speaking	3
Speech 11: Training the Speaking Voice	3
Speech 32: Oral Reading	3
Speech 101: Voice and Phonetics	3
Speech 121: Group Discussion and Conference Leadership	3
Speech 153: Acting	3
Speech 175: Speech Correction	3
*One of the following areas of specialization, as approved by the adviser:	
Group 1—Speech Arts	
Twelve semester hours to be chosen from the following	12
Speech 122: Oral Interpretation of Literature	
Speech 126: Public Discussion and Debate	
Speech 154: Play Production	
Speech 160: History of the Theater	
Speech 169: Creative Dramatics and Children's Theater	
*Group 2—Speech Correction	
Twelve semester hours to be chosen from the following	12
Speech 176: Speech Correction	
Speech 177–78: Clinical Practice in Speech Therapy	
Speech 182: Introduction to Hearing Problems	
Speech 183–84: Clinical Practice in Hearing Therapy	
Additional courses in English, Physiology, Psychology, or Speech, as approved by the adviser	
Total	36

Professional Education

The basic professional information, skills, and attitudes needed by beginning teachers are provided through a sequence of courses to be taken in the junior and senior years. Lectures and class discussions are closely coordinated with field work. Instruction is differentiated to meet the needs of those preparing to teach on the various levels—elementary school, junior high school, senior high school, and adult.

Professional Courses—Secondary

Education 109–10: Learning and Teaching	6
*Education 121–22: Society and the School	6
Education 131: Common Teaching Skills	3
*Education 133–34: Observation and Student Teaching	6–9
Education 136 to 152: Special Methods	3–6
Total	24–30

Professional Courses—Elementary

Education 109–10: Learning and Teaching	6
Education 121–22: Society and the School	6
Education 111: Methods in Elementary Education	6
Education 133–34: Observation and Student Teaching	6–9
Total	24–27

*See reverse for the minor.

Learning and Teaching.—Candidates enrolled in four-year programs leading to the degree of Bachelor of Arts take this course in the junior year. Those enrolled in five-year programs take it in the senior year.

The course attempts to promote a functional understanding of the nature of learning and teaching—characteristics of learning and principles of teaching are presented and discussed in the two one-hour class meetings each week. At least an equal amount of time is spent in observation and study of the application of these characteristics and principles to classroom situations. Class discussion normally revolves around these field experiences.

The course is also intended to provide the student with exploratory experiences of assistance to him in deciding whether to choose the profession of teaching. The student's performance in connection with the course is one of the factors considered when the Faculty reviews the list of candidates who have completed the first semester of the junior year (senior year for those enrolled in five-year programs).

Society and the School.—This course is also taken in the junior year by candidates enrolled in four-year programs (senior year by those in five-year programs).

The first half of the course attempts to promote an understanding and appreciation of the role of schools in the sound promotion of the enduring interests of our democratic society. More particularly, it attempts to develop a functional understanding of the contributions of all social agencies in the education of people and of desirable cooperative working relations that help the school to play its part as a member of the institutional "team" of the community.

The second half of the course is concerned with study of the school as a whole—its purposes, program of studies, out-of-class activities, general organization, and major instructional problems. Although schools at all levels are studied, students give particular attention to schools at the level within which they are preparing to teach.

Classes meet for lecture and discussion two hours a week. At least an equal amount of time is spent in field study. During the first half each student studies cooperating social institutions. In the second half extended study of schools at the level of the student's special interest is supplemented by briefer studies of schools at other levels. Class discussion is largely determined by field experiences.

This course is also intended to provide the student with exploratory experiences of guidance value. The performance of the student in the first half of the course is also given careful consideration by the Faculty in its review of the list of candidates at the beginning of the second semester of the junior year (senior year for those enrolled in five-year programs).

Common Teaching Skills.—Those enrolled in four-year programs take this course in the senior year. Those enrolled in five-year programs take it in the fifth year.

The course is concerned with the skills needed by teachers in connection with classroom management, teaching techniques, homeroom procedures, administrative routines, activity sponsorship, group planning, and public relations.

Classes meet three hours a week for lecture, discussion, and laboratory. The observation of classroom teaching done in connection with the Observation Course (Education 133), for which students are normally enrolled concurrently, provides the field work of the course.

Special Methods Courses.—Associated with each teaching field is a course dealing with its special teaching problems. In addition to the study of practices followed by successful teachers, actual teaching content as found in current texts and courses of study is reviewed. Needed content, not included in academic courses available for teaching-field preparation, is taught in these courses.

Observation and Student Teaching.—This course is taken in the senior year by students enrolled in four-year programs (in the fifth year by those in five-year programs).

It begins with the observation of classroom teaching in selected situations. Assumption of responsibility for teaching functions is gradual, leading eventually to practice in the complete direction of classroom activities. Those preparing to teach in secondary schools have the opportunity of observing and doing practice teaching in both major and minor teaching fields on the senior high school level. The course is directed by full time members of the faculty of the School of Education. The work of each student is under the direct supervision of a critic teacher, selected because of unusual success in teaching, ability to supervise, and broad understanding of educational problems. Critic teachers are part-time members of the instructional staff of the School. Observation and student teaching are done in the public schools of the metropolitan area of Washington, assuring practice in situations comparable to those the student is likely to face on becoming a teacher.

Special Curricula in Elementary Education

Students preparing for elementary school teaching may also qualify as teachers of French, Spanish, remedial speech, and remedial reading. Programs should be planned in conference with an adviser.

Admission

To be admitted to candidacy for the degree of Bachelor of Arts in Education, the applicant must: (1) hold an Associate in Arts degree based on the Education Curriculum in the Junior College or the equiva-

lent from another accredited higher institution, or a certificate of graduation from an approved normal school or the equivalent; (2) have a quality-point index of 2.00 (average grade of C) counting "Incomplete" grades as "F"; (3) have demonstrated a genuine interest in teaching and possess personality traits that give promise of success as a teacher; and (4) have an interview in the Office of the School of Education.

FIVE-YEAR PROGRAMS LEADING TO THE DEGREES OF BACHELOR OF ARTS AND MASTER OF ARTS IN EDUCATION

Five-year programs are designed: (1) to permit more adequate teaching-field and professional preparation, (2) to prepare for special teaching positions, and (3) to meet teaching-certificate requirements based upon five years of preparation.

Students in these programs usually devote the junior year to additional teaching field preparation and general education. Ordinarily, teaching-field preparation is continued in the senior year and the first two professional courses (Education 109–10, 121–22) are taken. The work of the fifth year includes the remaining undergraduate professional courses and the balance of graduate courses needed to meet the requirements of the degree of Master of Arts.

Candidates must have a quality-point index of at least 2.50 before beginning the work of the senior year. As much as 18 semester hours of the work of the senior year may be taken for graduate credit. Observation and Student Teaching, taken in the fifth year, may not be taken for graduate credit.

Candidates enrolled in five-year programs are able to prepare more adequately in their major or minor teaching fields, or in both. Additional teaching-field courses must be approved by the adviser in the teaching field concerned.

The five-year plan of study also provides an opportunity for candidates to prepare to teach "common learnings" courses in one or more of the various core curriculum plans now being adopted in many secondary schools. Such programs need to be carefully planned to meet the demands of the situation in which the candidate hopes to teach.

A number of cities and some states require five years of satisfactory preparation before issuing certain teaching certificates. Candidates seeking such certificates should familiarize themselves with the requirements of the community or state concerned and plan their programs accordingly.

Five-year programs must meet all the requirements of the degrees of Bachelor of Arts and Master of Arts in Education, and must be approved by the adviser designated for these programs.

PROGRAMS LEADING TO THE DEGREE OF MASTER OF ARTS IN EDUCATION

Programs of study leading to the degree of Master of Arts are designed: (1) to enable teachers of experience to increase their knowledge of professional and academic information and skills, (2) to prepare for special types of educational service, and (3) to provide opportunities for graduates of liberal arts colleges to acquire needed professional education.

Programs are planned in conference with the designated Adviser and take into consideration the interests of the candidate, his previous background, and the certification requirements of the state and locality in which he plans to teach.

Plans of Study

Two general plans of study lead to the degree.

Plan 1.—This plan requires a minimum of 30 hours of graduate credit, including a thesis carrying 6 hours of graduate credit.

Plan 2.—This plan requires a minimum of 33 hours of graduate credit, including a course in *Educational Research Methods and Procedures* carrying 3 hours of graduate credit.

Graduate work completed in other accredited institutions of learning may be credited toward the Master's degree, but a minimum of 30 semester hours must be completed in the School of Education of The George Washington University. Not more than nine semester hours of the minimum thirty-hour requirement may be taken in off-campus courses.

Advanced courses completed in excess of the requirements for the Bachelor's degree in this University may be credited toward the Master's degree to the extent of 12 semester hours, provided the work fits in with the student's plan of specialization and is approved in writing by the Dean before being undertaken.

In determining advanced standing at the time of admission or readmission to Master's candidacy at this University, graduate work completed more than three years previously is not counted.

Under Plan 1, a minimum of 12 semester hours, in addition to the thesis, must be from courses planned primarily for graduate students (third-group courses). Under Plan 2, a minimum of 18 semester hours, in addition to the course in *Educational Research Methods and Procedures*, must be from third-group courses. Under either plan a minimum of 12 semester hours, not including the thesis or the research course, must be from courses offered in the Department of Education.

Programs may provide for additional academic preparation in one or more teaching fields. In such cases, however, undergraduate and

graduate courses combined must be at least equivalent to the undergraduate requirements for the degree of Bachelor of Arts in Education in the teaching field concerned.

Programs are normally based upon undergraduate preparation equivalent to the requirements of the degree of Bachelor of Arts in Education (see pages 12–13). Candidates with less professional preparation must make up their deficiences either prerequiste to or as part of their graduate study.

Each candidate must file in the Office of the Dean not later than one month after admission to the School of Education a program of study approved by his adviser.

Comprehensive Examination

In addition to the course examinations, the candidate must pass a professional comprehensive examination in two parts: (1) a general examination concerned with an integrated understanding of the major areas in professional education, and (2) a special examination concerned with the candidate's area of specialization.

The general part of the comprehensive examination is divided into three groups as follows: Group I (Foundations) covers learning and teaching, society and the school, child and adolescent growth and development, history of education, philosophy of education, and educational research; Group II (Major Levels) covers elementary education, secondary education, adult education, employee training, vocational education, and physical education; Group III (Common Elements) covers administration, curriculum, evaluation, guidance, methodology, and reading.

The candidate must be prepared to answer two questions in each group, none of which shall include his area of specialization.

Programs of Study

Secondary Education—Senior or Junior High School

Students interested in secondary school teaching whose undergraduate degrees are in professional education are encouraged to strengthen their teaching-field preparation by including in their programs of study content courses.

Programs include, in addition to teaching-field courses six semester hours in Secondary Education, and an additional twelve semester hours of work chosen from the following professional courses: Audio-visual Education, Adolescent Growth and Development, Contemporary Problems in Education, Curriculum, Evaluation, Extra-classroom Activities, Group Procedures in Education, Guidance in Secondary Schools, and History of Education.

School Administration—Secondary School Principalship or Elementary School Principalship

Programs of those interested in the position of principal customarily include The Teacher and School Administration, The Teacher and School Supervision, and either Secondary School Management or Administration of Elementary Education. Additional courses are chosen as needed from Adult Education, Curriculum, Elementary Education, Guidance, Public Relations, School Law, Planning the School Plant, and Secondary Education.

Adult Education

Programs of those particularly interested in the education of adults may or may not include additional teaching-field preparation. In addition to six semester hours of work in Adult Education professional courses may be chosen from Audio-visual Education, Contemporary Problems in Education, Curriculum, Employee Training, Evaluation, Group Procedures in Education, Guidance, History of Education, and Mental Hygiene.

Elementary Education—Intermediate Grade or Early Childhood Education

Programs customarily include either Elementary Education or Early Childhood Education with additional courses chosen from Audio-visual Education, Child Growth and Development, Children's Literature, Group Contemporary Problems in Education, Curriculum, Education of the Exceptional, Elementary School Classroom Procedures, Evaluation, Group Procedures in Education, History of Education, Mental Hygiene, Reading Problems, and Speech Correction.

Curriculum

Programs of those interested in specializing in curriculum development include six semester hours of work in Curriculum with additional courses chosen from Adolescent Growth and Development, Adult Education, Audio-visual Education, Child Growth and Development, Course of Study Construction, Elementary Education, Evaluation, Extra classroom Activities, Group Procedures in Education, and Secondary Education.

Employee Training

Programs for those interested in the training of employees in business, industry, and government normally include courses in Employee Training and Adult Education. Additional courses are chosen from Audio-

visual Education, Contemporary Problems in Education, Curriculum, Guidance, Mental Hygiene, Personnel Psychology, Public Relations, and Techniques of Counseling.

Guidance

Programs for those especially interested in guidance usually include courses in Educational and Vocational Guidance, Techniques of Counseling, Guidance in Secondary Schools, and Occupational and Educational Information. Additional Courses frequently chosen include Adult Education, Contemporary Problems in Education, Curriculum, Employee Training, Evaluation, Group Procedures in Education, Individual Psychological Testing, Personnel Psychology, Psychological Tests, Secondary Education, and Test Construction.

Reading

Programs for those especially interested in developmental and remedial reading include courses in Reading Problems and the Clinical Study of Reading Problems. Additional courses are chosen from Child Growth and Development, Contemporary Problems in Education, Curriculum, Education of the Exceptional, Education of the Slow Learner, and Education of the Gifted.

Admission

To be admitted to candidacy for the degree of Master of Arts in Education the applicant must: (1) hold a Bachelor's degree from an accredited institution; (2) have an undergraduate quality-point index of 2.50 or above (C + average); (3) have demonstrated a genuine interest in teaching; (4) be in possession of personality traits that give promise of better-than-average success as a teacher.

To be admitted to candidacy in programs designed to prepare for service in guidance and administration two years of successful teaching experience are prerequisite. Candidates who have had no professional courses must satisfactorily complete the required undergraduate professional courses, including Observation and Student Teaching, in addition to graduate course requirements.

THE ADVANCED PROFESSIONAL CERTIFICATE

Upon the satisfactory completion of the program of advanced graduate studies of the School of Education, the Advanced Professional Certificate is granted. This program is designed to prepare teachers and administrators for more effective service in their chosen fields and to enable them to qualify for a higher step in the local salary scale.

The program of studies leading to the certificate is selected by the candidate and his adviser from the various related departments of the

University in accordance with his needs. In general it includes thirty hours of graduate credit beyond the Master's degree. The candidate wishing to increase his teaching proficiency may include additional study in his teaching field.

Admission to Candidacy

A Bachelor of Arts degree in Education or Bachelor of Science degree in Physical Education from the School of Education, or the equivalent from another institution of higher learning; a Master's degree, from an accredited institution, at least two years of successful teaching experience, and a permanent teaching or administrative license are required. The applicant who is unable to meet the admission requirements may be admitted with deficiencies to be met by satisfactorily completing prerequisites in addition to the specified program of graduate study. Each applicant must be interviewed by a member of the Faculty of the School of Education. The applicant seeking to quality for a higher level in the local salary scale must have his program approved by the appropriate representative of the school system employing him.

Transfer of Credit

Appropriate graduate work completed in other accredited higher institutions may be credited toward the requirements for the Certificate, but a minimum of eighteen semester hours must be completed at The George Washington University as a matriculated candidate in the School of Education. The candidate is encouraged to include in his program study at other accredited higher institutions when such study seems to be in his best interest. In determining advanced standing at the time of admission or readmission to Certificate candidacy, graduate work completed more than three years previously is not counted.

Requirements for the Certificate

Plans of Study

In planning his program of studies the candidate should give first consideration to his particular needs. If he is a teacher and his graduate study leading to the Master's degree was largely in professional education, he may find it desirable to emphasize additional mastery of his teaching field. If his Master's preparation was in a content field, he may wish to devote a major part of his program to additional professional study. Those in administration and related services may wish to continue specialization on a more advanced level.

The program of study must include, in addition to any prerequisites, a minimum of thirty hours of graduate credit in third-group courses and not less than twelve semester hours in courses offered by the School of Education.

Residence

Candidates for the Advanced Professional Certificate must complete satisfactorily at this University a minimum of eighteen semester hours in courses offered on the campus. The balance of the program may be in the College of General Studies off-campus courses or in other approved institutions of higher learning. The candidate is not required to pursue his program of study continuously. On request, a leave of absence is granted to the candidate for a period not to exceed three years.

PROGRAM LEADING TO THE DEGREE OF DOCTOR OF EDUCATION

The requirements for the degree of Doctor of Education cannot be stated in semester hours, but they consist in general of at least two full years of work beyond the degree of Master of Arts in Education or the equivalent. The programs of study are designed to prepare students for administrative or supervisory positions, the teaching of education in normal schools or colleges, the teaching of an academic subject in schools or colleges, or for specialized types of educational service. The work is given a practical rather than a theoretical bent, and emphasizes the mastery and application of subject matter, both in the study requirements and in the dissertation. Special emphasis is placed upon the professional success of the candidate.

The candidate's program of study depends for the most part upon his previous educational background and his professional objective. Opportunities are provided for study leading to the following professional objectives:

School Superintendent
Secondary School Principal
Elementary School Principal
Supervisor
Director of Guidance
Director of Curriculum Development
Professor of Education
Specialist in Educational Research

Qualifications of the Applicant

The candidate for the degree of Doctor of Education must have completed (1) graduate work in fields prerequisite to his objective, equivalent to that required for the degree of Master of Arts in Education in The George Washington University, and (2) at least three years of successful educational experience.

Admission to Candidacy

To be admitted to candidacy for the degree the applicant must be accepted by the Committee on Graduate Studies on the basis of an examination which will usually include the following: (1) a written examination involving problems related to the applicant's background; (2) a scholastic-aptitude test; (3) an oral examination.

Consultative Committee

If the applicant is accepted as a candidate, his consultative committee, in cooperation with the candidate, will (1) determine the candidate's fields of study, in each of which the candidate must pass a written examination at least eight months before he presents himself for the degree; (2) formulate a list of course requirements and of readings that will assist him in preparing for these examinations; and (3) designate the tools of investigation that will be needed by the candidate in the prosecution of his study. These tools may include one foreign language, or more, statistical methods, historical criticism, or any others considered essential by the committee. An examination in the tools designated must be passed by the candidate before he takes his comprehensive examination.

The Dissertation

When the candidate has satisfied the requirements of his consultative committee, the committee is dissolved. A member of the faculty, in whose field the topic of the dissertation falls, is then appointed to serve as the candidate's adviser on his dissertation and in his field of specialization, and to recommend him to the Dean for the final oral examination when, in his judgment, the candidate's dissertation is acceptable.

Not later than the date specified in the University calendar the candidate shall submit to the Dean of the School of Education three copies of his dissertation—one typewritten original and two legible and complete carbon copies, on official thesis paper—and also a typewritten summary of the dissertation consisting of not more than 3,500 words. Requirements regarding the form of the dissertation are stated in the general catalogue and additional information will be supplied by the Dean.

The successful candidate is required, before receiving his degree, to pay a fee to cover the expense of printing the summary of his dissertation.

The Final Examination

At least three weeks before the degree is to be conferred the candidate must pass an oral examination on his dissertation and on his field of specialization before a committee of the Faculty appointed by the

Dean, supplemented by two experts from outside the University appointed by the President. This examination is open to the public and all are privileged to question the candidate. The Dean, or a member of the Faculty designated by him, will preside at this examination.

READING CLINIC

To help children and adults with reading difficulties the University operates a diagnostic and corrective reading clinic. Children may be referred by principals, teachers, or parents. Adults may apply by telephone.

To arrange for a clinical examination of reading status, address The George Washington University Reading Clinic, 802 Twenty-first Street, NW., or telephone STerling 3-0250, Extension 491, for an appointment. The Clinic is open for appointments Monday through Friday, from 9:00 A.M. to 5:00 P.M.

A complete diagnostic examination usually requires the greater part of a day. When completed, a written report is given and a conference arranged at which disabilities are discussed in detail and suggestions for corrective work are outlined. The fee is $25.

SPECIAL CURRICULA

The School of Education provides special curricula for Liberal Arts Graduates, housewives, and retired military personnel who wish to prepare for teaching. It also provides a wide range of courses of interest to (1) emergency teachers who wish to qualify for teaching certificates and (2) teachers who wish to renew licenses. Leaflets describing these curricula may be obtained on request.

REGULATIONS

Students in the School of Education are subject to, and are expected to familiarize themselves with, the general University regulations stated in the University catalogue.

REGISTRATION

Before a student may be admitted to registration he must have satisfied the Office of the Director of Admissions that he is qualified to enter the University.

A student who has previously matriculated in the University, but who has not been in attendance during the semester prior to registration, should file an application for readmission in advance of registration.

Registration is for the semester unless otherwise indicated on the registration paper. No registration is accepted for less than a semester or one summer session.

A student may not register concurrently in The George Washington University and another institution without the permission of the Dean. Allowance of credit for work done concurrently will be at the discretion of the Committee on Admission and Advanced Standing.

Amount of Work

Fifteen to seventeen semester hours of credit constitute a normal program. A student with a quality-point index of 3.00 or higher, may, with the permission of the Dean, enroll for eighteen or nineteen hours. No student may enroll for more than nineteen, except by permission of the Committee on Scholarship.

A student with extra-curricular employment of fifteen hours or less a week is permitted to carry a normal program of college work.

A student with extra-curricular employment of from sixteen to twenty-five hours a week may enroll for twelve or thirteen hours. Such a student with a quality-point index of 3.00 or higher may, with special permission of the Dean, enroll for fifteen or sixteen hours.

A student with extra-curricular employment of from twenty-six to thirty-four hours a week may enroll for nine or ten semester hours. Such a student with a quality point index of 3.00 or higher may, with special permission of the Dean, enroll for twelve or thirteen hours.

A student with extra-curricular employment of thirty-five hours or more a week may enroll for six or seven semester hours. Such a student with a quality-point index of 3.00 or higher may, with special permission of the Dean, enroll for nine or ten semester hours.

A student who increases his hours of employment subsequent to registra-

tion or at any time during a semester is required to report that fact immediately to the Dean so that his program may be brought within the limitations outlined above.

ATTENDANCE

A student is not permitted to attend classes until registration has been completed and fees due have been paid. Regular attendance is required. A student may be dropped from any course for undue absence.

PROBATION

An undergraduate student who fails to maintain a quality-point index of at least 2.00 will be placed on probation. A student remains on probation as long as his quality-point index is below 2.00, or until his probation is removed by the Committee on Scholarship.

SUSPENSION

An undergraduate student on probation who fails to raise his quality-point index to 2.00 within the time specified by the Committee on Scholarship may be suspended. An undergraduate student who fails to make passing grades in one-half or more of a minimum of 16 semester hours of course work may be suspended.

A student who has been suspended, either for delinquency in payment of fees or for any other reason, is not permitted to attend classes during the period of suspension.

A student who has been suspended for poor scholarship may within ten days appeal his case to the Committee on Scholarship through the Dean. If the case appears to be remediable and the student appears likely to improve in his scholarship thereafter, the Committee may readmit him on probation. A student who has been denied readmission on probation may petition the Committee on Scholarship through the Dean for readmission after the lapse of a calendar year. A student who has been suspended twice will not be readmitted.

WITHDRAWAL

Withdrawal from a course or from the University, *without academic or financial penalty*, requires the permission of the Dean. Permission to withdraw from the University will not be granted a student who has not a clear financial record.

Withdrawal between October 31 and the end of the fall semester and between February 28 and the end of the spring semester is permitted only in exceptional cases.

All charges for courses dropped without the approval of the Dean must be met by the student. Reporting the dropping of a course to an instructor does not effect its discontinuance.

CHANGES IN PROGRAM OF STUDIES

Changes within the School.—A student may not change or drop courses (see "Withdrawals", above) or change his status to that of auditor except with the approval of the Dean, upon presentation of adequate reasons for such changes.

Change from one section to another of the same course may be made with the approval of the Dean and the department concerned.

Change from one major subject to another within the same college or school may be made with the approval of the Dean. All requirements specified in the course of study to which the change is made must be satisfied before graduation.

Transfers within the University.—Transfer from one college, school, or division to another may be made only with the approval of the deans concerned. Application for transfer must be made to the Director of Admissions on the proper form provided by his office.

In order to provide degree candidates with proper academic counsel and the benefits of integrated programs of study, the faculties of the various schools and colleges have established minimum residence requirements and regulations with regard to supervision of the work done in the student's major field. In addition, various special regulations regarding course sequence, selection of electives, and advisory approval of programs apply in particular curricula. Students transferring within the University are advised to study carefully the graduation requirements and to note that in all undergraduate divisions 30 semester hours, including *at least 15 semester hours* in the major field, must be completed *in residence* in the school or college from which the degree is sought. Upon transfer the student should consult the dean concerned and understand clearly all the requirements he must fulfill.

SUMMER SCHOOL CREDIT

A student who plans to attend summer school sessions at another institution with the intention of having credits so obtained apply toward graduation from this University must first secure the written approval of the Dean. In no event will such credits be recognized to an amount in excess of that which might be earned in a similar period in this institution.

GRADUATION REQUIREMENTS

To be recommended for graduation a student must have met the admission requirements of the college or school in which he is registered, completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree for which he is registered, and be free from all indebtedness to the University.

Application for Graduation.—Application for a degree should be filed in the Office of the Registrar at the time of registration for the last term of the senior or final year.

Scholarship.—The undergraduate student must maintain a quality-point index of at least 2.00.

The graduate student must maintain a quality-point index of 3.00.

Residence.—A minimum of one year, or thirty semester hours, including at least twelve hours in the major field, must be completed in residence. Not more than nine hours of the residence requirement may be satisfied by off-campus courses. Summer work may be counted in residence, but in no case may the period of residence aggregate less than thirty weeks. Unless special permission is granted by the Dean to pursue work elsewhere, the work of the senior or final year must be completed in residence.

The graduate student must meet the residence requirements for the particular degree for which he is registered.

With the permission of the Dean a student may be granted leave of absence; such student should, however, remain technically in residence by paying the residence fee for each semester he is absent. For the purpose of this regulation, the summer sessions will not be considered a semester.

Attendance and Conduct.—The University reserves the right to refuse to confer a degree upon a candidate whose attendance or conduct has been unsatisfactory.

Presence at Graduation.—A candidate is required to be present at the graduation exercises unless written application for graduation in absentia is approved by the Dean.

THE LIBRARY

A student registered in the University is entitled to the reference use of the University Library. The Student Identification Card, issued upon the payment of fees, must be presented as identification.

Library books, with the exception of those in the Law and Medical collections, may be drawn for home use for a period of two weeks. Any book which does circulate is subject to recall by the Librarian at any time. Reserve books and periodicals for collateral reading must be used in the reading rooms when the Library is open. With special permission they may be drawn for overnight use when the Library closes. A fine of twenty-five cents will be charged for the first hour or fraction of an hour and five cents for each hour or fraction thereafter that a reserve book is overdue. Grades of a student will be withheld until his library record is clear.

Hours

The University Library is open from 9:00 A.M. to 10:00 P.M. each class day (Saturday 9:00 A.M. to 5:00 P.M.), and from 2:00 to 6:00 P.M. on Sunday.

FEES AND FINANCIAL REGULATIONS

By authorization of the Board of Trustees, the following fees have been adopted:

TUITION FEES

For each semester hour for which the student registers (except work taken by a candidate for a Doctor's degree) $17.00

For the degree of Doctor of Education

For work* leading to and including the general examination 50.00

For work leading to and including the final examination 50.00

ADDITIONAL COURSE FEES

In certain courses additional fees, such as laboratory and material fees, are charged as indicated in the course descriptions. These fees are charged by the semester and, unless otherwise indicated, may be delayed in three payments when the tuition is paid in this manner. Breakage of apparatus is charged against the individual student. When breakage is in excess of the normal amount provided for in the laboratory fee the individual student will be required to pay such additional charges as are determined by the department concerned.

GRADUATION FEES

Wherein a degree is conferred 25.00

Wherein an Advanced Professional Certificate is conferred 25.00

FEE FOR BINDING MASTER'S THESIS 6.00

FEE FOR PRINTING SUMMARY OF DOCTORAL DISSERTATION 85.00

SPECIAL FEES

Application fee, charged each applicant for admission, non-refundable 3.00

Late-registration fee, charged each student who fails to register within the designated period 5.00

Change fee, charged each student for each change in program increasing the number of credit hours for the course 2.00

Withdrawal fee, charged each student who preregisters and withdraws prior to the regular registration 5.00

Service fee, charged each student for late payment of tuition (see "Payment of Fees") 2.00

Reinstatement fee, charged each student who is reinstated after suspension for delinquency in fees 5.00

Residence fee, charged each student wishing to maintain "in residence" status during any semester of absence from the University after completion of tuition requirements 17.00

Fee for special physical examination 2.00

Special examination to qualify for advanced standing and for each subject 5.00

Laboratory clearance fee, charged each student in chemistry courses who fails to check out of the laboratory by the time set by the instructor 3.00

Transcript fee, charged for each transcript of record after the first 1.00

* This fee does not cover the cost of tuition for elementary courses (numbered 1–100).

Registration in the University entitles each student to the following University privileges: (1) the issuance of one certified transcript of record, if and when desired; (2) the services of the Placement Office; (3) the use of University library facilities, except as otherwise designated; (4) gymnasium privileges; (5) admission to all athletic contests, unless otherwise specified; (6) subscription to the *University Hatchet*, the student newspaper; (7) admission to University debates; (8) medical attention and hospital services as described in the General Catalogue. These privileges, with the exception of the issuance of transcripts, terminate, and a student is no longer in residence, when he withdraws or is dismissed from the University.

Payment of Fees

All fees are payable at the Office of the Cashier, 725 Twenty-first Street NW. No student is permitted to complete registration or to attend classes until all fees are paid. Fees for each semester are due and payable in advance at the time of registration.

In exceptional cases, subject to the approval of the Treasurer, the student may sign a contract for semester charges, except for fees payable in advance, permitting payments as follows:

Fall Semester.—One-third at the time of registration; one-third on November 5; one-third on December 3.

Spring Semester.—One-third at the time of registration; one-third on March 4; one-third on April 3.

A student who fails to meet payments when due, but who pays his fees on or before the fifteenth of the month in which payment is due, is charged a service fee of $1. A student who fails to meet payments by the fifteenth of the month in which payment is due will be automatically suspended and may not attend classes until he has been officially reinstated and has paid all accrued fees and a reinstatement fee of $6.

A student suspended for failure to meet payments when due may not be reinstated for the semester after two weeks from the date of suspension. Applications for reinstatement are to be made to the Office of the Cashier.

An auditor pays all fees chargeable to the student registered for credit except the late-registration fee.

Withdrawals and Refunds

Application for withdrawal from the University or for change in class schedule must be made in person or in writing to the Dean. Notification to an instructor is not an acceptable notice.

In authorized withdrawals and changes in schedules, financial adjustments will be made as follows:

Fall Semester.—Withdrawal dated on or before October 31, cancellation of two-thirds of tuition charges; withdrawal dated on or before November 30, cancellation of one-third of tuition charges. No refund or reduction will be allowed on a withdrawal dated subsequent to November 30.

Spring Semester.—Withdrawal dated on or before February 28, cancellation of two-thirds of tuition charges; withdrawal dated on or before March 30, cancellation of one-third of tuition charges. No refund or reduction will be allowed on a withdrawal dated subsequent to March 30.

In no case will a refund be made of the first third of the total tuition charges unless the registration is in advance and is cancelled before the regular registration day. In this case a withdrawal fee of $5 is charged and tuition fees refunded. In no case will tuition be reduced or refunded because of nonattendance upon classes.

Payment applies only to the semester for which a registration charge is incurred and in no case will this payment be credited to another semester.

Any student in chemistry who fails to check out of the laboratory on or before the date set by the instructor, unless excused by the instructor, will be charged a checkout fee in the amount of $2. A student who drops a course before the end of the semester must check out of the laboratory at the next regular laboratory period.

Any student enrolled in the Air Force ROTC who fails to turn in uniforms, equipment, and textbooks, on separation from the Corps, will be charged the value of the missing items.

Authorization to withdraw and certification for work done will not be given a student who has not a clear financial record.

RIGHT TO DISMISS STUDENTS

The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable to do so.

RIGHT TO CHANGE RULES

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

PROPERTY RESPONSIBILITY

The University is not responsible for the loss of personal property in any University building. A "Lost and Found" Office is maintained in the Student Union.

COURSES OF INSTRUCTION

The University reserves the right to withdraw any course announced.

Explanation of Course Numbers

First-group courses.—Courses numbered from 1 to 100 are planned for students in the freshman and sophomore years. With the approval of the adviser and the Dean, they may also be taken by juniors and seniors. In certain instances, they may be taken by graduate students to make up undergraduate deficiencies or as prerequisite to advanced courses, but they may not be credited toward a higher degree.

Second-group courses.—Courses numbered from 101 to 200 are planned for students in the junior and senior years. They may be credited toward higher degrees only when registration for graduate credit has been approved at the beginning of the course by the Dean of the School of Education and by the officer of instruction concerned, and when the completion of additional work has been certified by the officer of instruction.

Third-group courses.—Courses numbered from 201 to 300 are planned primarily for graduate students. They are open, with the approval of the officer of instruction, to qualified seniors.

Indication of the Amount of Credit

The number of semester hours of credit given for the satisfactory completion of a course is indicated in parentheses after the name of the course. Thus, a year course giving three hours of credit each semester is marked (3–3), and a semester course giving three hours of credit is marked (3).

DEPARTMENT OF EDUCATION

Courses offered by the Department of Education are of two types: those designed for the preservice education of candidates and those planned for the inservice education of teachers.

Preservice courses devote two fifty-minute periods a week to lecture and discussion supplemented by a minimum of two hours a week of related field work. A clinical approach to the study of educational problems is used—lectures and discussions revolving around observed practices.

Inservice courses usually meet only once a week for a two-hour period. Class work is supplemented by extensive reading assignments, the preparation of reports, and field work. A student enrolled in one

of these courses should plan to devote not less than seven hours a week, exclusive of class time, to the work of the course.

Ample opportunity is provided to study teaching or administrative problems of special interest. To enable students to consult with instructors regarding individual problems, a conference hour is scheduled immediately before or after the class period.

Only the courses designed to provide professional information and skills are listed below. For courses needed for general education or teaching-field preparation, see the general catalogue. In addition to courses offered in the Department of Education a number of professional courses for teachers are offered in the departments of Psychology, Speech, and Statistics. These are listed below together with courses offered by the Department of Education.

Whenever possible, the exact hour of class meeting is stated. Hours for classes not yet scheduled may be found in the Schedule of Classes for the semester concerned.

First Group

Education A *Reading Clinic* — Coleman and Staff

Diagnosis of reading difficulties: individual or group lessons without academic credit. Fee for diagnosis, $25; for individual lesson, $3.50; for group lesson, $2.50; material fee, $4.

Psychology 22 *Introduction to Educational Psychology* (3) — Faith, Lindley

Fall—TTh 6:10–7:25 P.M.; spring—morning; summer 1956.

Consideration of individual and group differences, adjustments, and the psychology of learning in relation to education and training.

Psychology 29 *Child Psychology* (3) — E. Johnson

Fall—MW 5:45–7 P.M.; spring—morning; summer 1956.

A genetic approach to the study of the child. Special emphasis is placed on the socialization process, learning, and the child's view of the world.

Statistics 53 *Introduction to Statistics in Psychology and Education* (3) — The Staff

Fall: *lecture* section A—TTh 10:10 A.M.; section B—MW 7:35–8:25 P.M.; *laboratory* section M—T 1:10–2:50 P.M., section N—Th 1:10–2:50 P.M., section P—Th 3:10–4:50 P.M., section Q—M 8:35–11:10 P.M., section R—W 8:35–11:10 P.M. Spring—evening. Summer 1956. Sources of data, tabulation, charts and graphs, averages, dispersion, graphics and presentation, raw scores and derived scores, percentile norms and their use, frequency distribution, interference and other questions, reliability and validity of tests, normal curve, correlation, elementary sampling, statistical error, limitations of statistics. Prerequisite: one entrance unit in Algebra. Laboratory fee, $9.

Second Group

Statistics 105 *Statistics in Psychology and Education* McCall
(3)

Spring: lecture (2 hours), laboratory (2 hours)—morning.

Advanced study of correlation and frequency analysis, sampling theory, factor analysis, and applications to specific problems in the case method of study in so far as possible. Original work is required of each student. Prerequisite: Statistics 51. Laboratory fee, $5.

Education 109–10 *Learning and Teaching* (3–3) McCauley

Lecture (2 hours), conference (1 hour), field work (2 hours) as arranged.

First half—Fall: section A—M 1:10–3 P.M., section B—W 1:10–3 P.M., section C—F 10:10–12 A.M.; summer 1956.

Second half—Fall: F 1:10–3 P.M.; spring: section A—M 1:10–3 P.M., section B—W 6:10–8 P.M.; summer 1956 (Rhodes).

For the general student as well as the prospective teacher. *First half*: nature of learning approached through the study of classroom situations. *Second half*: nature of teaching approached through observation of classroom situations.

Education 111 *Methods in Elementary Education* (6) LaBue

Fall—TTh 9 A.M.–4:30 P.M.

For seniors in the elementary school curriculum. An integrated methods course dealing with the learning experiences designed to meet the developmental needs of children in the pre-natal and early senses, the language arts, and concepts of number. Also included: the study of general classroom procedures and the evaluation of pupil progress. To be taken concurrently with Education 113. Prerequisite: Education 109–10 and 121–22.

Education 113 *Elementary School Art* (3) Nowlin

Fall: section A—T 6:10–9 P.M., field work as arranged; section B—Th 6:10–9 P.M., field work as arranged.

For juniors in the elementary school curriculum. Materials and methods. Prerequisite: Psychology 1 and 29. Material fee, $4 or $5.

Education 114 *Elementary School Music* (3) Reed

Spring—Th 7:35–9:35 P.M., field work (2 hours) as arranged.

For juniors in the elementary school curriculum. Materials and methods. Prerequisite: Psychology 1 and 29.

Education 115 *Teaching of Reading in the Elementary School* (3) Hanigan

Fall—F 7:10–9 P.M., field work (2 hours) as arranged.

A basic course in methods, techniques, materials, and activities essential to a good elementary school reading program. Prerequisite: Education 109–10 and 121–22 or teaching experience.

Education 116 *Elementary School Social Studies* (3) St. Cyr

Spring—F 7:10–9 P.M., field work (2 hours) as arranged.

For teachers. Content and methods of teaching. Prerequisite: Education 109–10 and 121–22 or teaching experience.

Education 117 *Elementary School Science* (3) St. Cyr

Fall—S 9:10–12 A.M., field work as arranged; summer 1956.

For teachers. Materials and methods. Prerequisite: Education 109–10 and 121–22 or teaching experience.

Education 120 *Elementary School Arithmetic* (3) St. Cyr

Spring—T 7:35–9:35 P.M.; field work (2 hours) as arranged.

For teachers. Content, materials, and methods. Prerequisite: Education 109–10 and 121–22 or teaching experience.

Education 121–22 *Society and the School* (3–3) St. Cyr

First half—Fall: section A—W 1:10–3 P.M., field work MW 3:10–4 P.M.; section B lecture—M 6:10–8 P.M., field work MW 8:10–9 P.M. Summer 1956. *Second half*—Fall: Th 1:10–3 P.M., field work TTh 3:10–4 P.M.; spring: section A—W 1:10–3 P.M., field work MW 3:10–4 P.M.; section B lecture—M 6:10–8 P.M., field work MW 8:10–9 P.M. Summer 1956.

For the general student as well as the prospective teacher. *First half:* the local, national, and international roles of education; cooperation of the school with other community agencies. *Second half:* organization and operation of schools; principles and functions.

Psychology 121 *Educational Psychology* (3) Faith

Fall—as arranged; spring—as arranged.

Advanced course in educational psychology. Admission by permission of the instructor.

Education 128 *Children's Literature* (3) Walker

Spring—M 7:10–9:10 P.M., field work (2 hours) as arranged; summer 1956 (Wilson).

For juniors in the elementary school curriculum. Exploring and evaluating the newer books for children and the children's classics; understanding the contribution of literature in child development; appreciating children's original expressions. Prerequisite: Psychology 1 and 29.

Psychology 129 *Introduction to Counseling and Guidance* (3) Dreese

Fall—TTh 6:10–7:25 P.M. Summer 1956.

A survey of the basic principles, techniques, and procedures as applied to vocational, educational, and personal counseling.

Education 131 *Common Teaching Skills* (3) Detwiler

Fall—MW 12:30–1:45 P.M.; spring—MW 4:30–5:45 P.M.

For seniors in the secondary school curriculum. Course unit, [illegible] son planning, practical techniques used in connection with [illegible] the assignment, group procedures, directing study, individual differences, evaluation, clerical routines, discipline, the homeroom activity sponsorship, public relations. Prerequisite: Education 109–10 and 121–22.

Psychology 131 *Psychological Tests* (3)

Fall—TTh 11:10 A.M.–12:25 P.M.; spring—evening; summer 1956.

A survey of psychological tests and their more common uses in business, industry, government, law, medicine, and education. Materials fee, $7

Education 133–34 *Observation and Student Teaching* (3–3 to 6) LaBue, McCauley, Detwiler

A year course; credit is not given for the first half until the second half is completed.

First half: fall—section A (elementary) TTh 9 A.M.–4:30 P.M., as arranged; section B (secondary)—as arranged; spring as arranged. *Second half*: spring—sections A (elementary), B (secondary), and C as arranged.

For seniors in the elementary or secondary school curriculum. Section A is a year course for students in the elementary school curriculum. Section B is a year course for students in the secondary school curriculum. Section C is for students enrolled in the graduate program. Education 134 student-teaching fee, $5. Admission by permission of the instructor. Prerequisite: Education 130–31 and 121–22. Faith

Psychology 141 *Leadership, Group Behavior, and Student Life* (3)

Fall—TTh 11:10 A.M.–12:25 P.M.

A survey of the foundations of leadership, of the factors which [illegible] he effective participation in group activities, and of the interrelations between the student and his university. Hubbard, Mosel

Psychology 144 *Personnel Psychology* (3)

Fall—TTh 7:35–8:50 P.M.; spring—morning, summer 1956.

The applications of psychology to personnel work in education, business, industry, and government. Mosel

Psychology 146 *Problems in Human Relations* (3)

Fall—MWF 11:10 A.M.; spring—evening.

The application of psychological principles to understanding and improving personal and group relations. Emphasis will be [illegible] studies and specific problems drawn from life situations, with [illegible]

tant attention to supervisory and administrative relationships. Prerequisite: Psychology 1 (or Psychology 145 for students in the special programs).

Special Methods Courses *

To be elected in the senior year after substantial preparation in the teaching fields concerned by the students in the secondary school curriculum. Course requirements and hours of credit vary with license requirements. Practices of successful teachers are studied and actual teaching content as found in current texts and courses of study is reviewed.

Education 136 *Teaching English* (2 to 4) — Lumsden

Spring—M 7:10–9 10 P.M., field work (2 hours) as arranged.

Prerequisite*: eighteen semester hours in English.

Education 138 *Teaching Social Studies* (2 to 4) — Root

Spring—Th 7 35–9 35 P.M., field work (2 hours) as arranged.

Prerequisite*: twenty-four semester hours of social studies.

Education 140 *Teaching Mathematics* (3) — Weida

Spring—T 5 10–7 P.M.

Prerequisite*: Mathematics through calculus.

Education 144 *Teaching Science* (2 to 4) — Rumbough

Spring—Th 5 10–7 P.M., field work (2 hours) as arranged.

Prerequisite*: twenty-four to forty semester hours of science.

Education 146 *Teaching Foreign Languages* (2 to 4) — Doyle, Keating

Spring—T 5 10–7 P.M.

Prerequisite*: eighteen semester hours of one foreign language.

Education 148 *Teaching Home Economics* (2) — Kirkpatrick

Spring—as arranged.

Prerequisite*: thirty semester hours of Home Economics.

Education 150 *Teaching Business Subjects* (2) — Shott

Spring—as arranged.

Prerequisite*: thirty semester hours of business education.

Speech 175–76 *Speech Correction* (3–3) — Pettit

Academic year—TTh 7–35–8 50 P.M.

A study of the causes of the disorders of speech with emphasis on prevention, diagnosis and treatment of defective speech. Admission by permission of the instructor.

* Prerequisite to all special methods courses: Education 109 10, 121–22, and 131. Additional prerequisites are stated under each course.

Third Group*

Education 205–6 *The Curriculum*† (3–3) Bish

Academic year—S 11:10 A.M.–1 P.M.

For experienced teachers. *First half:* curriculum foundations and issues; comparison of curriculum patterns. *Second half:* principles and procedures in curriculum development; group consideration of student problems.

Education 207 *Curriculum Materials*† (3) Bish

Summer 1956.

For experienced teachers. The study and construction of courses of study, resource units, classroom teaching aids, and inexpensive materials; direct application to students' own situations.

Education 209 *Child Growth and Development* (3) LaBue

Fall—S 11:10 A.M.–1 P.M.; summer 1956.

An interdisciplinary approach to child development taking into account such factors as society and culture, socialization, and socializing agents with particular emphasis on the home and school.

Education 210 *Adolescent Growth and Development* (3) LaBue

Spring—S 11:10 A.M.–1 P.M.

A consideration of physical, intellectual, and cultural backgrounds of adolescence with particular emphasis on social development, adjustment to organized society, educational development and adjustment to school, and home relationships.

Education 212 *Evaluation in Education*† (3) McCauley

Spring—F 7:15–9:15 P.M.; summer 1956 (Kempfer).

Concept of evaluation, relationship between evaluation of ends and means, steps involved in the evaluation of learning outcomes. As the course progresses each student develops solutions for evaluation problems related to his work situation.

Education 213–14 *History of Education* (3–3) Jarman

Academic year—Th 7:15–9:35 P.M.

First half: the European backgrounds of American education. *Second half:* the evolution of the American school system.

* A degree from an accredited institution is prerequisite to all third-group courses.
† Prerequisite: adequate professional preparation.

Education 215 *Education of the Exceptional*• (3) LaBue

Summer 1956.

For classroom teachers. A survey of current problems in the education and guidance of exceptional pupils. Nature and needs of those physically, mentally, or emotionally handicapped; needs of the gifted. Resources for help in correction, diagnosis, therapy, education, and guidance.

Education 216 *Education of the Slow-Learner*• (3) LaBue

Not offered 1956–57.

Identification, nature, and needs of the slow-learner at the elementary and junior high school levels. Emphasis upon curriculum development designed for regular classroom teachers who must provide special methods and materials in the education and guidance of the slow-learner. Also of interest to special-class teachers and administrators.

Education 217–18 *Contemporary Problems in Education*• (3–3) Jarman

Academic year—M 7:10–9:10 P.M.; summer 1956—Education 218 (3).

First half: designed to help students formulate a personal philosophy of education. *Second half:* social foundations of education—a study of the forces that shape the policies and offerings of the school.

Education 219 *Elementary School Classroom Procedures*• (3) LaBue

Summer 1956.

Current classroom practices with particular emphasis on ways of learning, unit teaching, techniques in discipline, and values and group citizenship, techniques, resources for learning, providing for individual differences.

Education 220 *Intermediate Grade Education*• (3)

Not offered 1956–57.

A study of the curriculum and methods of teaching in the intermediate grades, based upon a growing understanding of the child and his environment.

Education 221–22 *Early Childhood Education*• (3–3)

Not offered 1956–57.

For experienced teachers. *First half:* nursery school and kindergarten education. *Second half:* education in the primary grades.

Prerequisite: adequate professional preparation.

Psychology 221 *Seminar: Psychology of the Handicapped: Dynamics of Adjustment* (3) — Hunt

Spring—evening.

The dynamics of adjustment and criteria of adjustment in general; the specific problems of adjustment in the handicapped.

Education 223–24 *Reading Problems** (3–3) — Coleman

Academic year—W 7:10–9:10 P.M.

For experienced teachers. A clinical approach to reading difficulties on elementary and secondary school levels. Demonstrations and observations, with clinic cases.

Education 225 *Elementary School Reading* (3) — Coleman

Summer 1956.

Developmental and remedial approaches to reading problems. Demonstrations of diagnostic and corrective techniques used in the Reading Clinic.

Psychology 225 *Seminar: Mental Hygiene* (3) — Caldwell

Fall—T 6:10–8 P.M.; summer 1956.

A study of mental health problems with special attention to principles of prevention.

Psychology 226 *Seminar: Clinical Psychology of Childhood* (3) — Johnson

Spring—evening.

A survey of children's behavior and personality disorders.

Education 227 *Basic Issues in Elementary Education* (3) — LaBue

Fall—M 7:10–9:10 P.M.

A consideration of basic issues in the purposes, organization, and conduct of elementary education. Emphasis on the philosophical and psychological roots of fundamental assumptions as they relate to classroom practices.

Psychology 227 *Seminar: Counseling and Guidance* (3) — Dreese

Spring—evening.

Recent developments and current problems in vocational, educational, and personal guidance in various types of agencies with particular reference to education. Prerequisite: educational or psychological measurements and Psychology 129 or the equivalent.

Education 228 *Instructional Areas in Elementary Education* (3) — LaBue

Spring—M 7:10–9:10 P.M.

Critical appraisal of the objectives, organization, learning and experiences, and teaching methods in the six broad areas of instruction in the elementary school.

Psychology 228 *Seminar: Techniques of Counseling* (3) — Dreese

Spring—evening.

Specific types of vocational, educational, and personal counseling problems approached through the case method. Prerequisite: recent previous course in counseling and guidance and familiarity with individual analysis methods.

Education 229 *Administration of Elementary Education* (3) — Marinaccio

Summer 1956.

For experienced teachers and administrators. Administration as a process of achieving instructional objectives, organizing learning and teaching activities, handling supplies and equipment, maintaining the building, and integrating school and community life. Emphasis upon guide lines to action.

Psychology 229 *Seminar: Occupational and Educational Information* (3) — Faith

Spring—evening.

Designed to acquaint vocational and educational counselors with the basic occupational and educational information necessary in counseling. Sources of data and techniques of collecting, analyzing, and disseminating for purposes of guidance.

Education 231 *Secondary School Classroom Procedures** (3) — Bish

Fall—TTh 7:35–9:35 P.M., summer 1956.

Survey of current classroom practices with particular attention to selected topics such as teacher-pupil planning, group procedures, pupil responsibility and cooperation, individual and group activities, evaluation techniques, teaching aids, etc.; review of recent literature.

Psychology 231 *Test Construction* (3) — Mosél

Fall—T 8:10–10 P.M.

The principles underlying test construction; statistical techniques in the preparation, evaluation and standardization of psychological, educational and vocational tests. Prerequisite: a course in tests and measurements and a course in statistics.

* Requires appropriate professional preparation.

Psychology 232 *Research: Test Construction* (3) ————, Hunt

Fall—as arranged; spring—as arranged.

Individual projects in construction and evaluation of psychological, educational, or vocational tests. Prerequisite: Psychology 231 and permission of the instructor.

Education 233 *Audio-visual Education*• (3) J. Johnson

Spring—S 9:10–11 A.M., laboratory—S 11:10 A.M.–1 P.M.

Role of audio-visual materials in learning; selection, evaluation, and use of materials; administrative problems in the care, operation, maintenance and use of audio-visual materials and equipment. Material fee, $7.

Psychology 233 *Individual Psychological Testing* (3) E. Johnson

Fall—F 1:10–6 P.M.; spring—afternoon; summer 1956.

Instruction and practice in giving of the Binet Test and the Wechsler-Bellevue Test. Prerequisite an elementary course in tests and measurements. Material fee $7.

Education 239 *Teaching the Core Curriculum*• (3) Bish

Not offered 1956–57.

An examination and study of classroom teaching procedures appropriate to the core program.

Education 241 *Education of the Gifted*• (3) Indeed

Summer 1956.

For classroom teachers. Nature and discovery of giftedness, provisions for the gifted in regular classes, experimental projects. Marinaccio

Education 243 *Human Relations in the Classroom*• (3)

Summer 1956.

Principles and practices involved in interpersonal relationships between learner and teacher and among learners. Angel

Education 245 *School and Community*• (3)

Summer 1956.

The school as an important member of a team of social agencies that builds the community.

• Prerequisite adequate professional preparation.

Education 251 *Guidance in Secondary Schools*• (3) Brougher

Fall—M 7:10–9:10 P.M.; summer 1956.

Scope; needs; organization of the program; services to students, the instructional staff, and the administration; personnel needed for the program.

Education 252 *Teaching the Biological Sciences* (3) Hansen

Summer 1956.

A workshop to extend the resources of experimentation in content and methodology.

Education 254 *The Junior High School*• (3) Bish, Root

Not offered 1956–57.

Purposes, organization, core programs, guidance, developing course of study, extra-classroom activities.

Education 255–56 *Secondary Education*• (3–3) Root

Academic year—S 9:10–11 A.M.; summer 1956.

First half: current proposals for the reorganization of secondary education. *Second half:* current problems in each of the subject-matter fields.

Education 259–60 *Secondary School Management*• (3–3) H. Johnson

Academic year—lecture—S 9:30–11:30 A.M.; lunch—S 11:30 A.M.–1 P.M., discussion groups—S 1–3 P.M.

For experienced teachers and administrators with two years of successful teaching in secondary schools. Management planning, execution, and control; criteria of good management; construction of the master schedule; leadership problems incident to the development of new policies and programs.

Education 263–64 *Employee Training* (3–3) Root

Academic year—Th 7:35–9:35 P.M.

First half: nature and purposes, organization and administration of training programs; training for executive, supervisory, apprentice, clerical, sales, technical, trades and maintenance classifications with wider consideration of methods and techniques; coordination with other management functions. *Second half:* current practices, operating policies, and problems of selected organizations. Prerequisite: adequate professional preparation or two years of experience in employee training.

•Prerequisite: adequate professional preparation.

Education 270 *Art Education* (3) Nowlin

Spring—Th 6:10–9 P.M.

For experienced teachers. Basic philosophies of modern art educators; use of visual and tactile media; emphasis upon visual aids, displays, and use of community resources. Designed to increase awareness of the creative process. Prerequisite: Education 113.

Education 271 *The Teacher and School Administration** (3) Fox

Fall—W 7:10–9:10 P.M.; Summer 1956

A survey course for teachers and prospective administrators. Education and world affairs national agencies, role of the state, local administration, school finance, legal controls, school plant, public support, democratic administrative procedures, improving teaching conditions.

Education 272 *The Teacher and School Supervision** (3) Lang

Spring—W 7:10–9:10 P.M.

Nature, organization, human relationships, and techniques.

Education 276 *Seminar: Public Relations in School Administration** (3) Root

Summer 1956.

Purposes, gathering materials, disseminating agencies, publicity media, public participation in policy making.

Education 278 *School Law** (3) Remmlein

Not offered 1956–57.

Sources and scope of school law, legal rights and responsibilities of teachers, pupils, and taxpayers. Other legal problems of major interest to the group.

Education 279–80 *Adult Education** (3–3) Detwiler

Academic year—F 7 10–9 10 P.M.; summer 1956—Education 280 3[1]

First half: current concepts and objectives, agencies involved, programs on all levels—international through community. *Second half:* the adult as a learner, the teacher of adults, learning-teaching activities, administration of adult education programs. Root

Education 281 *Group Procedures in Education** (3)

Fall—T 7:35–9:35 P.M.

Theory, practice, evaluation, and application to all educational levels.

* Prerequisite: adequate professional preparation.

Education 285 *Extra-classroom Activities*• (3) — Root

Not offered 1956–57.

Nature and purposes of selected activities—homeroom, clubs, assemblies, school publications, student council, interscholastic contests; particular attention to sponsorship, participation, finance, and evaluation.

Education 287–88 *Clinical Study of Reading Problems*• (3–3) — Coleman

Academic year—S 11:10 A.M.–1:00 P.M.

For advanced students. Diagnostic and corrective work under supervision in the Reading Clinic. Each student is expected to diagnose and treat pupils who are retarded in reading. Case studies are presented and criticized. Education 287, material fee, $7. Prerequisite: Education 223–24 or the equivalent.

Education 289–90 *Supervisory Problems in Reading*• (3–3) — Coleman

Not offered 1956–57.

For experienced teachers, principals, supervisors, and superintendents. Considers the problems involved in planning, reorganizing, and improving the total reading program, in promoting cooperative effort on the part of the staff toward increasing teaching efficiency.

Education 291 *Planning the School Plant* (3) — Hamon

Not offered 1956–57.

Selection of sites; evaluation of existing buildings; utilization of present facilities; adaptation to curricular needs; building, operation, and maintenance problems.

Education 293–94 *Research* (3–3) — The Staff

Academic year—as arranged.

Individual research under the guidance of a member of the staff. Program and conferences arranged with an instructor.

Education 295 *Educational Research Methods and Procedures* (3) — Fox, LaBue

Fall—T 5:30–7:30 P.M.; spring—F 7:10–9:10 P.M.; summer 1956.

Required of all Master of Arts candidates following Plan 2. Knowledge of elementary statistics required.

Education 297 *Reading in Education* — The Staff

Fall—W 5:10–6 P.M.; spring—W 5:10–6 P.M.; summer 1956.

To assist those preparing for the comprehensive examination. No. credit toward degree requirements. Tuition fee, $17.00.

• Prerequisite, adequate professional preparation.

Education 299–300 *Thesis* (3–3) The Staff

Academic year—as arranged; summer 1956.

Required of all Master of Arts candidates following Plan 1.

DEPARTMENTS OF PHYSICAL EDUCATION

The following courses are offered by the Department of Physical Education for Men and the Department of Physical Education for Women. Whenever possible the departments offer lecture courses jointly.

First Group

43–44 *Techniques of Physical Education Motor Activities* (2–2) DeAngelis, Krupa

Academic year—TTh 10:10–12 A.M.

Fundamental skills, rules, and organizations. Locker and towel fee,* $4.50 a semester.

45–46 *Methods and Materials for Teaching Individual and Dual Sports in Secondary Schools* (2–2) The Staff

Academic year—TTh 10:10–12 A.M.

Tennis, golf, swimming, wrestling, badminton, bowling. Locker and towel fee.* $4.50 a semester.

47 *Introduction to Physical Education* (2) Myers

Fall—TTh 8:10 A.M.

An orientation course presenting the problems of physical education, vocational analysis, scientific foundations, and scope of field.

48 *Introduction to Recreation* (2) Hanken

Spring—as arranged.

The role of recreation in modern living; current practices in community recreation work; standards of training, experience, and salary, types of leadership.

49 *Human Anatomy* (3) Stallings

Fall—MWF 9:10 A.M.

The structure of the human body. Basic course for physical education majors. Also open to both men and women not majoring in Physical Education. Prerequisite: Biology 1–2 or Zoology 1–2.

50 *Kinesiology* (3) Lawrence

Spring—morning.

A study of the anatomical mechanism of movement, analysis of the action of muscles in physical education activities. Prerequisite: approved course in anatomy.

* The locker and towel is required for registration in one or more of the activity courses

58 *First Aid and Care of Athletic Injuries* (2) — DeAngelis, Lawrence

Spring—afternoon.

Prevention and emergency care of injuries of all types, with special reference to first aid, civil defense, bandaging, and massage. A practical course. Prerequisite: Biology 1–2 or Zoology 1–2.

SECOND GROUP

101 *Physical Education in the Elementary School* (3) — Atwell, Burtner

Fall: section A—F 1:10 P.M., laboratory—F 2:10–4 P.M.; section B—T 5:10 P.M., laboratory—T 7:10–9 P.M.

Physical growth and development of the child and adolescent. Survey of age characteristics and organization of physical education activities for the various age levels in elementary school, playground, and settlement house programs. Methods and materials of tumbling, games, dance, and self-testing activities.

103 *History and Principles of Physical Education* (3) — Atwell, Krupa

Fall—MWF 11:10 A.M.

Survey of history as it relates to contemporary physical education. Study of aims, objectives, and philosophy of physical education.

105–6 *Corrective Physical Education and Physical Examinations* (3–3) — Lawrence

Academic year—MWF 10:10 A.M.

Cause and correction of faulty body mechanics, physical examination methods for the diagnosis of postural defects, prescription of exercises, and program adaptation. Prerequisite: Physical Education 49 and 50.

107 *Techniques of Teaching Recreational Dance* (1) — _____

Fall—TTh 9:10 A.M.

Methods and materials for teaching the country and social dances of America and the folk dances of other countries to secondary-school age and adult groups. Square-dance calling is included. Locker and towel fee,* $4.50.

109–10 *Leadership Organization in the Intramural Program* (2–2) — DeAngelis

Academic year—T 1:10 P.M., laboratory—as arranged.

Principles of administration, organization, and supervision of intramural activities in the physical education program of the junior high school, senior high school, and college.

* Locker and towel is required for registration in one or more of the activity courses.

113–14 *Methods and Practice in Teaching Physical Education Activities* (2 to 4–2 to 4) — Hanken and Staff

Academic year—Th 1:10 P.M., laboratory—as arranged.

Principles and methods applied to learning and teaching physical education activities. Supervised laboratory. Locker and towel fee,* $4.50 a semester.

115–16 *Method and Materials for Teaching Team Sports in Secondary Schools* (2 to 4–2 to 4) — DeAngelis, Hanken

Academic year—TTh 11.10 A.M.

Football, basketball, baseball, track and field. Locker and towel fee,* $4.50 a semester.

117 *Methods of Teaching Modern Dance* (1 to 2) — Burtner

1956–57 and alternate years. Fall—TTh 2:10 P.M.

Techniques for the teaching of movement as a medium of expression. Practical work in body technique, composition, and the [illegible] accompaniment for dance including [illegible], verse, and percussion. Application is made to both secondary school and adult age levels. Locker and towel fee,* $4.50.

118 *Dance Production* (1 to 2) — Burtner

1956–57 and alternate years: spring—as arranged

Choreography for dance concerts, musicals, and plays. The planning and staging of dance for TV, dance demonstrations, and folk festivals. Lighting, costuming, sets, make-up for dance performances. Locker and towel fee,* $4.50.

121 *School and Community Health Programs* (3) — The Staff

Fall—MF 12:45–2 P.M.

Health services, healthful environment, health instruction, sources of material for general health knowledge. Prerequisite: Biology 1–2 or Zoology 1–2.

122 *Methods and Materials for Health Education* (3) — Atwell

Spring—evening.

Organization and presentation of health materials for each age level. Prerequisite: Biology 1–2 or Zoology 1–2. — Krupa

131 *Tests and Measurements in Physical Education* (3)

Fall—MWF 9:10 A.M.

Critical survey of tests in physical activities, methods of test construction, elementary statistics.

* The locker and towel is required for registration in one or more of the activity courses

132 *Camp Leadership* (1) Atwell, Stallings

Spring—afternoon.

Survey course in camp counseling.

133–34 *Observation and Student Teaching* (3–3 to 6) Atwell, Myers

First half: fall and spring—as arranged. *Second half:* fall and spring—as arranged.

Assignments are made to schools in Washington and the vicinity. Physical Education 134, student teaching fee, $50.

136 *Survey of Dance History and Dance Forms* (3) Burtner

Not offered 1956–57.

The development of dance from primitive ritual to present day recreational and art forms of the dance. Includes ethnologic dance. Practice and discussion of fundamental movement techniques and composition.

138 *Organization and Administration of Physical Education* (3) Atwell, Myers

Spring—morning.

Organization and administration of physical education programs in elementary and secondary schools and in colleges. Study of plants, fields, equipment, and programs.

151–52 *Recreational Leadership Activities* (1 to 3–1 to 3) Christiansen

1957–58 and alternate years.

Fall semester: basic skills for the pre-school and school-age child. Laboratory practice in crafts, music, dramatics, physical and social activities. Spring semester: basic skills for the teen-age and adult. Arts and crafts, dramatics, physical and social activities.

161 *Community Organization for Recreation* (3) Christiansen

1956–57 and alternate years. Fall—W 7:10–9:10 P.M.

Resources, principles, and methods in organizing community recreation services.

162 *Administration of Community Recreation Program* (3) Christiansen

1956–57 and alternate years. Spring—evening.

Factors and problems in administering recreation including surveys, organization, program, area, facilities, leadership, finance, and public relations.



THE GEORGE WASHINGTON UNIVERSITY
WASHINGTON, D. C.

Report of the Treasurer

FOR THE YEAR ENDED
AUGUST 31, 1956

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LETTER OF TRANSMITTAL

December 19, 1956

To the President and the Board of Trustees
The George Washington University
Washington, D. C.

Gentlemen:

I am submitting herewith the Report of the Treasurer of The George Washington University for the fiscal year ended August 31, 1956. This report is a review of the budget operations for the year and is based on the budget approved by the Board of Trustees of the University.

The accounts of the University are kept and its financial reports arranged as far as practicable in conformity with the recommendations of the National Committee on Standard Reports for Institutions of Higher Education. Under that plan the funds of the University are classified in various fund groups, and the accounts and financial statements segregate clearly the assets and liabilities of each of these groups as indicated in the balance sheet, Exhibit A.

Price Waterhouse and Company have examined the accounts of the University for the past year, and their report is submitted herewith.

A condensed summary of the principal facts in the report is presented below and on succeeding pages, followed by detailed Exhibits and Schedules.

Respectfully submitted,
Henry W. Herzog
Treasurer

CONDENSED SUMMARY

CURRENT FUNDS—UNRESTRICTED

These Funds represent assets which are available for immediate use in the current operation of the University.

Current Income for the Year (Exhibit B and Schedule 1)	12,568,869.43
Current Expense for the Year (Exhibit B and Schedule 2)	11,998,206.58
Excess of Current Income over Current Expense (Exhibit B)	570,662.85

The latter amount was added to Current Funds Surplus. Surplus at the end of the year amounted to $1,370,979.48 (Exhibit B). During the year there was transferred from Surplus to Net Investment in Plant $492,838.84 for the purchase of land and buildings, $88,163.10 for the purchase of equipment, and $17,422.71 for the reduction of trust notes payable.

Notes Payable of $150,000.00 were paid in full September 4, 1956. (Schedule 3).

Prepaid Expenses of $267,182.70 includes $132,780.63 at the University and $134,402.07 at the Hospital (Schedule 3).

Accounts Receivable in the amount of $1,168,555.72 (Schedule 3) include $808,307.35 due from the United States Government for organized research, of which approximately $81,000 represents direct and overhead expense allocated to certain contracts with the Department of the Army. The allocation of these expenses was made by the University consistent with policies followed in the preceding several years, on a basis negotiated with and acceptable to the Navy and the Air Force. However, the Army has not as yet adjudicated this matter. Hospital Accounts Receivable of $462,174.54 include $191,215.90 from patients hospitalized on or immediately prior to August 31, 1956, and from contracts with insurance and other agencies. The remainder of $270,958.64 represents past due accounts against which a reserve of $110,000 has been provided to cover possible collection losses.

CURRENT FUNDS—RESTRICTED

Research grants, investment income, gifts, and agency funds comprise these funds which consist of current expendable assets, limited as to disposition (Exhibit C and Schedules 10, 10A, 10B, 10C).

During this year restricted gifts and grants for use as specified amounted to $4,230,364.00 (page 102). Unexpended Restricted and Agency Funds totaled $1,141,351.19 (Exhibit C).

LOAN FUNDS

For the assistance of students seeking financial aid, loan funds have been established by the University and other organizations (Schedule 4). Loans are made at a low rate of interest and when repaid the interest is added to the principal of the funds.

During the year, 558 loans were made to students. Loan funds totaled $46,147.22.

ENDOWMENT FUNDS

The principal of endowment funds amounted to $4,380,922.65 (Exhibit F), an increase of $701,284.51. This increase is accounted for in large part by a grant from the Ford Foundation of $385,000.00, the income from which is to be used for faculty salaries, and the gifts to the Eugene Meyer Fund of $280,872.95, the income from which is to be used for a professorial chair in the School of Medicine. The endowment funds are represented by assets which, under the terms of wills, deeds of gift, or under the by-laws of the University, must be held in perpetual trust for income producing purposes. The principal amount and changes during the year are recorded in Schedule 12.

"Consolidated Endowment Funds" consisted of 129 endowments with a total value of $2,927,864.34 (Schedule 5). The assets of these funds are combined to eliminate the possibility of partial or total loss of any fund through the failure of a specific investment, and to avoid temporary suspension of income and the carrying of uninvested small cash balances, and to give equality of treatment to all funds. Unless otherwise restricted by the donors, the assets of all new endowments are added to the assets of the Consolidated Endowment Funds.

Reserves for Protection of Investments were as follows: Consolidated Endowment Funds, $99,589.99; Scottish Rite Fund, $59,987.82 (Schedule 12).

Earnings of Consolidated Endowment Funds are recorded in one income account and at the end of the year are distributed to the individual funds. On September 1, 1955, a market value basis for distribution of income was substituted for the previously used book value of principal. At the beginning of the year each fund was assigned participating units valued at $10.00 based on the market value of the total assets. New funds were admitted during the year at the beginning of each quarter and were assigned the number of participating units which their assets could purchase at the current market value of each unit. Income was distributed on the basis of total units, which is believed to provide a more equitable distribution. The rate of return on the investments of these funds amounted to 5.245% during the past year.

The Scottish Rite Endowment Fund earned 5.388% net income on its investments during the year just ended.

Net income of all endowment funds for the year was $201,666.48 (Schedule 10A—Page 3).

Pledges to the School of Medicine Endowment Fund on August 31, 1956, totaled $248,207.00.

PLANT FUNDS—UNEXPENDED

Cash and other assets for development of the physical plant comprise these funds (Schedule 7). At the end of the year the balance was $677,477.01 (Exhibit F).

Since the creation of the Tompkins Hall of Engineering Building Fund in 1946, gifts by the late Mr. Charles H. Tompkins and the late Mrs. Lida R. Tompkins, and income earned from the investment thereof, totaled $630,472.39. After payment of construction costs to date of $576,953.72, the balance in the Fund as of August 31, 1956, was $53,518.67. The building was opened to classes in September 1956.

PLANT FUNDS—INVESTED IN PLANT

Exhibits A and G, Schedules 8, 8A and 9	Balance August 31, 1955	Net Additions	Balance August 31, 1956
Land and Buildings	17,250,024.85	1,044,920.89	18,294,945.74
Equipment	2,029,327.60	117,153.02	2,146,480.62
Trust Notes Payable	618,457.92	65,612.03	684,069.95
Net Investment in Plant	18,660,894.53	1,096,461.88	19,757,356.41

REPORT OF INDEPENDENT AUDITORS

December 19, 1956

To the President and the Board of Trustees
The George Washington University
Washington, D. C.

We have examined the balance sheet of The George Washington University as of August 31, 1956, and the related statements of current income and expense, unrestricted current funds surplus and other fund transactions for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances. Receivables from the United States Government were not confirmed by direct correspondence; however, except for an amount of $81,000 mentioned in the succeeding paragraph, we satisfied ourselves with respect to such receivables by means of other auditing procedures.

Accounts receivable at August 31, 1956, include approximately $81,000, representing direct and overhead expenses allocated to certain contracts with the United States Department of the Army, the collectibility of which cannot be determined pending a review by the appropriate government agencies.

In our opinion, subject to the comment in the preceding paragraph, the accompanying financial statements present fairly the financial position of The George Washington University at August 31, 1956, and the results of its operations for the year then ended, in conformity with generally accepted principles of university and college accounting applied on a basis consistent with that of the preceding year.

PRICE WATERHOUSE & CO.

THE GEORGE WASHINGTON UNIVERSITY

BALANCE SHEET

August 31, 1956

Assets			Liabilities		
CURRENT FUNDS					
Unrestricted					
Cash	206,207.97		Notes Payable (Schedule 3)	150,000.00	
Investments (Schedule 3)	135,000.00		Accounts Payable	242,775.94	
Note Receivable (Schedule 3)	76,462.50		Deferred Income	89,653.47	
Accounts Receivable (Schedule 3)	1,168,555.72				
Prepaid Expense (Schedule 3)	267,182.70	1,853,408.89	Surplus (Exhibit B)	1,370,979.48	1,853,408.89
Restricted					
Cash	499,818.18				
Investments (Schedule 3)	635,915.01				
Inventory—Gift Shop	5,618.00	1,141,351.19	Principal of Funds (Exhibit C)		1,141,351.19
LOAN FUNDS					
Cash	19,411.51				
Loans Receivable (Schedule 4)	26,735.71	46,147.22	Principal of Funds (Exhibit D)		46,147.22

ENDOWMENT FUNDS

Cash	6,112.28			
Investments (Schedule 5)				
Stocks and Bonds (market value $4,921,494.00)	3,724,640.43			
Real Estate	199,981.00			
Other Investments	57,118.45			
	3,981,852.16			
Funds Held in Trust by Others (Schedule 6)	393,070.49	4,380,922.65	Principal of Funds (Exhibit E)	4,380,922.65

PLANT FUNDS

Unexpended

Cash	90,400.94			
Investments (Schedule 7)	587,076.07	677,477.01	Principal of Funds (Exhibit F)	677,477.01

Invested in Plant

Land and Buildings (Schedule 8)	18,294,945.74		Trust Notes Payable (Schedule 8A)	684,069.95	
Equipment (Schedule 9)	2,146,480.62	20,441,426.36	Net Investment in Plant (Exhibit G)	19,757,356.41	20,441,426.36
Total		28,540,733.32	Total		28,540,733.32

Exhibit A

SUMMARY OF CURRENT INCOME AND EXPENSE

For the Year Ended August 31, 1956

Income (Schedule 1)			
Educational and General			
Student Fees	3,475,765.92		
Investments	182,411.83		
Gifts	121,692.59		
Student Activities	103,701.35		
Miscellaneous	325,553.27		
Organized Research	3,508,625.34		
Hospital	4,333,750.20	12,051,500.50	
Auxiliary Enterprises		517,368.93	12,568,869.43
Expense (Schedule 2)			
Educational and General			
Administration and General	1,100,582.35		
Instruction	2,327,482.52		
Libraries	165,241.21		
Maintenance and Operation of Plant	554,514.01		
Student Activities	286,040.30		
Organized Research	3,508,625.34		
Hospital	4,119,273.10	12,061,758.83	
Auxiliary Enterprises		481,670.91	
Student Aid		45,999.50	
		12,589,429.24	
Less reimbursement of overhead included above		591,222.66	11,998,206.58
Excess of Current Income Over Current Expense			570,662.85

SUMMARY OF UNRESTRICTED CURRENT SURPLUS

For the Year Ended August 31, 1956

	Total	University	Hospital
Balance August 31, 1955	1,210,341.28	740,592.01	469,749.27
Additions			
Excess of Current Income over Current Expense	570,662.85	356,185.75	214,477.10
Hospital Depreciation included in Current Expense for which there was no outlay of Current Funds (Schedule 2)	188,400.00		188,400.00
	759,062.85	356,185.75	402,877.10
Deductions			
Transfer to Net Investment in Plant equal to cost of non-departmental capital additions from Unrestricted Current Funds—Exhibit G	598,424.65	474,499.59	123,925.06
Balance August 31, 1956—Exhibit A	1,370,979.48	622,278.17	748,701.31

Exhibit B

SUMMARY OF RESTRICTED CURRENT FUNDS PRINCIPAL

For the Year Ended August 31, 1956

	Total	Organized Research (Schedule 10)	Investment Income (Schedule 10A)	Miscellaneous (Schedule 10B)	Agency (Schedule 10C)
Balance August 31, 1955	531,098.33	294,093.51	87,247.61	139,250.67	10,506.54
Additions					
Gifts, grants, deposits		3,605,756.41		603,315.58	38,871.60
Investment income			224,631.17	802.25	
	4,473,377.01	3,605,756.41	224,631.17	604,117.83	38,871.60
Deductions					
Salaries		2,262,214.62			
Expense		1,246,410.72		1,045.92	
Scholarships, fellowships			8,901.00	12,622.06	
Prizes			2,138.55	430.00	
Transferred to					
Hospital				4,080.00	
Exhibit G—Net Investment in Plant			113.47		
Schedule 1—Current Income			189,101.40	74,396.79	
Schedule 10B—Restricted Miscellaneous Funds			802.25		
Schedule 12—Endowment Funds			4,596.40	68.00	
Schedule 13—Plant Funds			10,481.84	10,583.39	
Withdrawals				52.00	35,085.74
	3,863,124.15	3,508,625.34	216,134.91	103,278.16	35,085.74
Balance August 31, 1956—Exhibit A	1,141,351.19	391,224.58	95,743.87	640,090.34	14,292.40

SUMMARY OF LOAN FUNDS PRINCIPAL

For the Year Ended August 31, 1956

BALANCE AUGUST 31, 1955		40,611.42
ADDITIONS (Schedule 11)		
Gifts	4,895.95	
Interest on loans	816.19	5,712.14
		46,323.56
DEDUCTIONS (Schedule 11)		
Refunded to U.S. Government		176.34
BALANCE AUGUST 31, 1956—EXHIBIT A		46,147.22

EXHIBIT D

SUMMARY OF ENDOWMENT FUNDS PRINCIPAL

For the Year Ended August 31, 1956

Balance August 31, 1955		3,679,638.14
Additions (Schedule 12)		
Gifts	692,547.65	
Investment income	4,596.40	
Net gains on sale of investments	4,139.24	
Transferred from Schedule 10B	65.00	701,348.29
		4,380,986.43
Deductions (Schedule 12)		
Net loss on sale of investments		63.78
Balance August 31, 1956—Exhibit A		4,380,922.65

SUMMARY OF PLANT FUNDS PRINCIPAL

For the Year Ended August 31, 1956

BALANCE AUGUST 31, 1955			953,183.25
ADDITIONS (Schedule 13)			
Gifts		283,146.01	
Investment income		10,481.84	
Transferred from Current Funds—Unrestricted		700.00	
Transferred from Schedule 10B		100.00	294,427.85
			1,247,611.10
DEDUCTIONS (Schedule 13)			
Invested in Plant—Exhibit G			
Land and Buildings	529,047.31		
Equipment	21,467.20	550,514.51	
Transferred to Schedule 1		19,500.37	
Transferred to Schedule 10C		119.21	570,134.09
BALANCE AUGUST 31, 1956—EXHIBIT A			677,477.01

EXHIBIT F

SUMMARY OF NET INVESTMENT IN PLANT

For the Year Ended August 31, 1956

	Unrestricted Current Funds		Restricted Current Funds (Exhibit C)	Plant Funds (Exhibit F)	Total
	Departments (Schedule 2)	Surplus (Exhibit B)			
Balance August 31, 1955					18,660,894.53
Additions					
University					
Land and Buildings		434,516.76		529,047.31	963,564.07
Equipment	135,809.25	22,560.12	113.47	6,872.65	165,355.49
Trust Notes Curtailed		17,422.71			17,422.71
	135,809.25	474,499.59	113.47	535,919.96	1,146,342.27
Hospital					
Land and Buildings		58,322.08			58,322.08
Equipment		65,602.98		14,594.55	80,197.53
		123,925.06		14,594.55	138,519.61
Total Additions	135,809.25	598,424.65	113.47	550,514.51	1,284,861.88
Deductions					
Depreciation of Hospital Building and Equipment		188,400.00			188,400.00
Total Net Additions	135,809.25	410,024.65	113.47	550,514.51	1,096,461.88
Balance August 31, 1956—Exhibit A					19,757,356.41

SCHEDULES

CURRENT INCOME

For the Year Ended August 31, 1956

EDUCATIONAL AND GENERAL			
Student Fees			
Tuition and Laboratory			
Columbian	250,044.23		
Education	129,989.26		
Engineering	271,420.19		
General Studies	209,720.30		
Institute of Correctional Administration	16,032.00		
Government	145,286.36		
Air Force Advanced Management	33,945.60		
Air Force Military, Economic and Politics Program	24,428.00		
Air Force Resources Management	126,000.00		
Navy Comptrollership	28,000.00		
Graduate Council	29,230.77		
Junior	685,861.33		
Law	325,866.75		
Medicine	336,734.00		
Post-Graduate Medical Education	14,426.27		
Pharmacy	14,248.18		
Special Students	184,296.26		
University Students	272,790.48	3,075,319.98	
Summer Sessions		292,466.63	
Unallocated—Old Fees		1,439.33	3,369,225.94

Miscellaneous Fees

Application	32,635.60		
Applicate	1,040.00		
Art Validation	300.00		
Binding Theses	605.00		
Breakage	423.25		
Engineers Council	2,730.00		
Graduation	28,440.50		
Graduate Record Examinations	2,280.00		
Late	950.00		
Library Fines	2,545.15		
Publication of Theses	2,775.00		
Reinstatement	1,515.00		
Service	2,859.00		
Special Examinations	551.00		
Student Bar Association	5,925.00		
Testing Center	16,686.07		
Transcripts	4,279.41	106,539.98	3,475,765.92

CURRENT INCOME (Continued)

For the Year Ended August 31, 1956

EDUCATIONAL AND GENERAL (Continued)

INVESTMENT INCOME (Schedule 10A)			
Endowment Funds—Unrestricted	42,674.33		
" " Restricted	128,180.66	170,854.99	
Plant Funds—Restricted		11,556.84	182,411.83
GIFTS			
Unrestricted (Appendix—Page 1)		21,572.68	
Restricted (Appendix—Page 1)	33,806.12		
Restricted (Schedule 10B—portion used)	66,313.79	100,119.91	121,692.59
STUDENT ACTIVITIES			
Athletics		75,285.15	
Band		83.76	
Campus Combo		108.50	
Career Conference		125.00	
Cherry Tree		9,143.30	
Colonial Boosters		655.40	
Dramatics		1,907.30	
Engineers Council		265.75	
Fashion Show		66.40	
Handbook		287.50	
Hatchet		7,516.14	
Homecoming		4,728.31	
Law Day		917.00	

[illegible] Dance	685.05	
[illegible]	20.00	
Spring Outing	706.65	
Student Bar Association	43.03	
Student Council Reserve	61.79	
Summer Carnival	348.32	
Winter Weekend	747.00	103,701.35
MISCELLANEOUS		
Discounts Earned	1,165.44	
Handling Fee—Veterans Administration	15,881.59	
Interest Earned	7,807.16	
Law Review	4,009.70	
Mechelecry	2,575.25	
Miscellaneous	1,844.01	
Parking Lot—2314 I Street, NW	22,325.39	
Personnel Office Credential Service	9.00	
Photographic Laboratory	607.51	
Reading Clinic	29,459.50	
Rent on Miscellaneous Properties—Net	45,765.82	
Speech Clinic	5,580.75	
Transfer from Hospital (Schedule 2) for support of School of Medicine	169,021.78	
Transfer from Law Center Fund (Schedule 13) for campaign expense	19,500.37	325,553.27
ORGANIZED RESEARCH (Schedule 10—portion used)		3,508,625.34

CURRENT INCOME (Continued)

For the Year Ended August 31, 1956

EDUCATIONAL AND GENERAL (Continued)

Hospital—Patients

Room Charges		
Private	524,409.00	
Semi-Private	1,267,328.70	
Wards	292,205.00	
Nurseries	131,102.00	2,185,039.70
Special Service Departments		
Operating Rooms	224,254.95	
Delivery Rooms	118,034.90	
Anesthesiology	289,576.35	
Oxygen Therapy	48,804.95	
X Ray	250,324.13	
Physical Medicine	84,191.68	
Laboratories	479,900.44	
Pharmacy	275,734.16	
Cardiology	33,588.90	
Electroencephalography	10,327.34	
Radioisotopes Laboratory	6,192.00	
Post Anesthesia Room	21,613.80	
Radiation Therapy	23,517.50	1,866,061.10

Cancer Clinic			
General Services	89,264.44		
Gifts	3,053.38		
Investment Income (Schedule 10A)	1,713.57		
Miscellaneous	14.96	94,046.35	
Out Patient Departments			
Clinics			
Emergency	67,517.29		
Ophthalmology	27,073.87		
Urology	16.50		
Surgery	12,404.50		
Dental	4,883.26		
Gynecology, Obstetrics	533.75		
	2,828.50	115,057.67	
Other Income			
Medical and Surgical Supplies	160,936.19		
Special Duty Nurses	5,176.00		
Telephone	20,583.54	186,695.73	4,446,900.55

(Continued)

CURRENT INCOME (Continued)

For the Year Ended August 31, 1956

EDUCATIONAL AND GENERAL (Continued)			
Hospital—Patients (Continued)		4,446,900.55	
Less Allowances			
Group Hospitalization	76,274.23		
Hospital Service Agency	15,439.34		
D. C. Health Department	818.03		
Discounts	7,798.33		
Free Work	142,028.93		
Other	3,423.74	245,782.60	
Total—Hospital Patients		4,201,117.95	
Hospital—Other Income			
Cafeteria	104,452.24		
Investment Income (Schedule 10A)	4,976.00		
Gifts	5,509.14		
Bad Debt Recovery	10,296.99		
Laundry	2,714.25		
Medical Abstracts	1,091.50		
Parking Rent	600.00		
Public Telephone Commissions	507.51		
Miscellaneous	2,484.62	132,632.25	4,333,750.20

AUXILIARY ENTERPRISES

RESIDENCE HALLS			
Nurses Home—Net	39,674.95		
Interns and Residents Hall	6,000.00		
Strong Hall	34,130.79		
Welling Hall	20,295.20	100,100.94	
SORORITY HALLS			
2112 G Street, NW.	1,350.00		
2129 G Street, NW.	4,500.00		
2131 G Street, NW.	780.00		
802 21st Street, NW.	630.00	7,260.00	
MISCELLANEOUS			
Book Store—University	337,664.63		
" " Medical School	53,091.54		
Cafeteria—Commissions	2,081.58		
Duplicating Bureau	485.34		
Lisner Auditorium	13,262.50		
Student Union	3,422.40	410,007.99	517,368.93
TOTAL—EXHIBIT B			12,568,869.43

CURRENT EXPENSE

For the Year Ended August 31, 1956

EDUCATIONAL AND GENERAL	Total	Salaries	Other Expense	Equipment Exhibit G
Administration and General				
President's Office	63,760.82	37,645.24	26,115.58	
Administrative Secretary's Office	65,707.44	61,482.39	4,225.05	
Dean of Faculties' Office	84,295.11	38,045.87	46,157.24	
Treasurer's Office	282,742.76	207,540.15	75,202.61	
Admissions Office	59,280.64	54,657.46	4,623.18	
Registrar's Office	59,183.57	50,986.78	8,196.79	
Activities for Men	7,011.21	6,476.44	534.77	
Activities for Women	14,118.23	13,141.08	977.15	
Advisor to Students from Foreign Countries	1,507.98	698.47	809.51	
Advisor to Students from Foreign Countries	1,662.81	856.00	706.31	
University Chapels	13,888.46	13,416.11	472.35	
Veterans Education	157,490.85	13,871.96	143,618.89	
Staff Benefits	65,093.00	17,076.01	48,016.99	
Assistant to the President's Office	39,376.48	17,137.09	22,239.29	
Alumni Relations	15,473.93	12,232.20	3,241.73	
Educational Counseling	2,188.26	1,933.84	254.42	
Fund Raising	46,074.76	24,354.84	21,719.92	
Public Relations	23,747.12	966.03	22,781.09	
Conventions	10,024.53	9,366.77	657.76	
Scientific Activities	27,657.05		27,657.05	
Financial Expense	10,585.38		10,585.38	
General Insurance	4,390.94		4,390.94	
Legal Expense	1,231.00		1,231.00	
Curator of Art	22,925.88	17,909.97	5,015.91	
Health Administration	19,500.37	13,226.15	6,274.22	
Campuses	1,965.37	1,923.86	42.51	
University Handbook				
	1,100,582.35	614,944.71	485,637.64	

[illegible]				
Art	5,854.47	5,491.35	363.12	
Biology	18,921.60	12,770.00	6,151.60	
Botany	16,205.05	15,650.00	464.84	90.21
Chemistry	15,564.80	13,845.00	282.90	1,436.40
Classical Languages and Literature	83,423.14	75,869.88	7,134.01	419.25
Economics	3,204.49	3,199.92	4.57	
English	45,818.06	45,212.42	100.64	
Geography	117,998.53	117,752.78	245.75	
Germanic Languages	16,282.54	15,440.00	557.80	284.65
History	15,620.54	15,537.50	83.04	
Journalism	51,007.13	50,841.21	165.92	
Mathematics	13,474.80	13,400.00	74.80	
Philosophy	55,005.67	55,560.00	47.67	
Physics	6,904.18	6,880.00	24.18	
Political Science	49,213.46	47,617.88	1,010.23	585.35
Psychology	36,951.11	36,864.92	86.19	
Religion	44,375.94	43,569.96	378.98	427.00
Romance Languages	16,719.42	16,669.88	49.54	
Secretarial Studies	63,149.32	62,919.88	229.44	
Slavic Languages	7,321.68	6,460.00	361.68	500.00
Sociology	5,050.73	5,020.00	30.73	
Speech	17,388.96	17,369.96	19.00	
Zoology	34,769.68	33,894.99	1,269.26	105.43
	22,193.62	19,289.64	2,605.60	298.38
	742,513.42	716,647.17	21,739.58	4,126.67

CURRENT EXPENSE (Continued)

For the Year Ended August 31, 1956

	Total	Salaries	Other Expense	Equipment Exhibit G
EDUCATIONAL AND GENERAL (Continued)				
Instruction (Continued)				
Education				
Administration	7,986.71	7,012.63	974.08	
Education	55,222.11	54,764.84	457.27	
Home Economics	12,523.10	11,200.00	1,166.10	157.00
	75,731.92	72,977.47	2,597.45	157.00
Engineering				
Administration	10,484.67	8,412.05	2,072.62	
Civil	46,248.76	44,060.16	863.94	1,324.66
Electrical	27,910.82	21,449.08	603.14	5,858.60
Mechanical	27,124.68	24,485.00	415.08	2,224.60
Engineering Administration	29,019.29	28,425.00	594.29	
Master of Science Program	1,872.68	1,575.00	297.68	
Engineers Council	1,795.75		1,795.75	
Mechelecіv	3,775.25		3,775.25	
Moving to Tompkins Hall	3,206.98	2,055.00	980.38	171.60
	151,438.88	130,461.29	11,398.13	9,579.46
General Studies				
Administration	61,288.96	51,852.80	9,366.16	70.00
Instruction	90,857.96	90,712.98	144.98	
Reading Clinic	18,138.81	17,227.55	670.36	240.90
Institute of Correctional Administration	11,317.26	7,201.80	4,115.46	
	181,602.99	166,995.13	14,296.96	310.90

[illegible]	6,855.68	6,117.41	738.27	
[illegible]	27,577.17	27,400.00	177.17	
Business Administration	32,185.00	32,035.00	150.00	
Foreign Affairs	1,350.00	1,350.00		
Public Administration	8,390.00	8,390.00		
Federal Government Management Interns	1,000.00	1,000.00		
Statistics	25,701.76	24,682.92	158.63	860.21
Navy Comptrollership	16,917.75	14,825.00	2,092.75	
Air Force Management	74,111.63	54,922.42	18,389.21	800.00
Air Force Advanced Management	21,730.35	17,324.85	4,405.50	
Air Force Military Economics and Politics	12,393.93	10,858.05	1,535.88	
	228,215.27	198,905.65	27,647.41	1,660.21
Graduate Council				
Administration				
Instruction	6,851.40	4,099.65	2,751.75	
	1,682.51	1,400.00	282.51	
	8,533.91	5,499.65	3,034.26	
Junior—Administration	6,355.42	5,776.69	578.73	
Law				
Administration				
Instruction	22,750.65	14,587.87	8,162.78	
Law Review	156,483.57	153,728.57	2,755.00	
Patent, Trademark and Copyright Foundation	12,116.51	2,175.00	9,941.51	
Student Bar Association	35,577.87	32,636.07	2,941.80	
	3,313.21		3,313.21	
	230,241.81	203,127.51	27,114.30	

CURRENT EXPENSE (Continued)

For the Year Ended August 31, 1956

	Total	Salaries	Other Expense	Equipment Exhibit G
EDUCATIONAL AND GENERAL (Continued)				
Instruction (Continued)				
Medicine				
Administration	44,149.61	35,839.76	4,366.36	3,943.49
Anatomy	46,015.43	43,625.20	1,897.58	492.65
Bacteriology, Hygiene and Preventive Medicine	39,513.78	35,829.20	2,533.32	1,151.26
Biochemistry	37,111.82	34,848.07	1,678.75	585.00
Dermatology and Syphilology	1,510.75	1,450.00	60.75	
Medicine	46,441.49	45,199.59	535.83	876.07
Neurology, Neurological Surgery	7,715.84	7,000.00	510.19	205.65
Obstetrics, Gynecology	29,457.90	29,057.90	400.00	
Ophthalmology	1,573.22	1,325.00	248.22	
Otolaryngology	345.00	300.00	45.00	
Pathology	29,123.40	26,409.42	1,189.98	1,524.00
Pediatrics	17,979.04	17,964.04	15.00	
Pharmacology	26,089.91	24,523.92	934.15	631.84
Physical Medicine and Rehabilitation	3,309.96	3,009.96	300.00	
Physiology	50,725.41	47,706.72	2,119.03	899.66
Psychiatry	2,047.35	1,950.00	97.35	
Surgery	35,074.01	31,958.90	2,552.06	563.05
Urology	1,664.69	1,475.00	189.69	
Post-Graduate Medical Education	14,426.27	6,199.88	8,226.39	
Research—General	19,104.29	5,265.66	8,088.23	5,750.40
Teaching Aids	6,665.74	5,400.00	765.74	500.00
Lectures and Exchange Professors	565.00	565.00		
	460,889.91	406,973.22	36,773.62	17,143.07

Pharmacy—Administration	2,737.88	2,100.00	637.88	
" Instruction	36,524.57	34,029.82	1,383.98	1,110.77
	39,262.45	36,129.82	2,021.86	1,110.77
Special—Administration	5,991.88	5,799.96	191.92	
University—Administration	5,636.94	4,904.76	732.18	
Summer Sessions—Administration	9,131.31	5,038.07	4,093.24	
" " Instruction	102,307.26	98,880.33	3,426.93	
	111,438.57	103,918.40	7,520.17	
Air Science—R. O. T. C.	6,918.52	5,417.87	1,500.65	
Physical Education—Men	35,054.44	28,085.22	6,969.22	
" Women	37,658.19	32,031.67	5,626.52	
	72,712.63	60,116.89	12,595.74	
Total Instruction	2,327,482.52	2,123,651.48	169,742.96	34,088.08

CURRENT EXPENSE (Continued)

For the Year Ended August 31, 1956

	Total	Salaries	Other Expense	Equipment Exhibit G
EDUCATIONAL AND GENERAL (Continued)				
Libraries—Books	47,972.71			47,972.71
" Other	117,268.50	91,309.81	13,817.84	12,140.85
	165,241.21	91,309.81	15,817.84	60,113.56
Maintenance and Operation of Plant	554,514.01	250,389.32	266,192.97	37,931.72
Student Activities	233,025.47	46,327.94	186,697.53	
Men's Athletics	7,961.07	4,573.55	3,387.52	
Dramatics	2,658.13	959.70	1,698.43	
Recreation Program	3,974.70	2,646.40	1,328.30	
Student Activities Office	4,684.64	2,749.92	1,914.72	
University Accounts	32,706.90	700.00	32,006.90	
Student Council Accounts	1,049.39		1,049.39	
Homecoming	286,040.30	57,957.51	228,082.79	
Organized Research (Schedule 10)	3,508,625.34	2,262,214.62	1,246,410.72	

Hospital

Administration	409,687.85	183,916.33	225,771.52
Dietary	522,648.47	277,747.85	244,900.62
Household and Property			
Laundry	65,691.37	63,716.61	1,974.76
Linen Service	45,496.00	15,018.43	30,477.57
Housekeeping	179,438.25	158,702.24	20,736.01
Plant	198,698.97	72,990.24	125,708.73
	489,324.59	310,427.52	178,897.07
Professional Care—General			
Medical and Surgical	99,427.64	82,527.64	16,900.00
Nursing Care	935,239.01	899,142.51	36,096.50
Central Sterile Supply	94,119.71	32,133.81	61,985.90
	1,128,786.36	1,013,803.96	114,982.40

CURRENT EXPENSE (Continued)

For the Year Ended August 31, 1956

	Total	Salaries	Other Expense	Equipment Exhibit G
EDUCATIONAL AND GENERAL (Continued)				
Hospital (Continued)				
Professional Care—Special	9,265.67	9,265.67		
Post-Anesthesia Room	156,546.76	96,592.11	59,954.65	
Operating Rooms	86,861.42	75,980.97	10,880.45	
Delivery Rooms	129,998.03	96,633.61	33,364.42	
Anesthesiology	22,391.63	10,821.10	11,570.53	
Inhalation Therapy	13,911.04	11,690.78	2,220.26	
Cardiology	5,460.77	4,992.30	468.47	
Electroencephalography	168,502.02	148,513.44	19,988.58	
Laboratories	124,493.90	22,798.76	101,695.14	
Pharmacy	48,099.48	46,626.35	1,473.13	
Physical Medicine	2,027.64		2,027.64	
Radioisotope Laboratory	142,663.62	95,313.80	47,349.82	
X-Ray	54,058.95	45,314.02	8,744.93	
Medical Records	2,408.05	1,308.47	1,099.58	
Medical Library for Residents and Interns	966,688.98	665,851.38	300,837.60	

Out Patient Department			
Administration	58,992.87	30,683.59	28,309.28
Nursing Care	51,699.86	51,699.86	
	110,692.73	82,383.45	28,309.28
Cancer Clinic			
Administration	38,572.37	25,926.69	12,645.68
Medical and Surgical	39,522.36	11,718.88	27,803.48
Research Animals	2,097.00		2,097.00
Laundry and Linen Service	440.79		440.79
Housekeeping	5,219.03	4,397.83	821.20
Plant	12,559.34	3,471.25	9,088.09
Overhead Credit—Research	(−11,304.19)		(−11,304.19)
Depreciation—Equipment	4,200.00		4,200.00
	91,306.70	45,514.65	45,792.05

CURRENT EXPENSE (Continued)

For the Year Ended August 31, 1956

	Total	Salaries	Other Expense	Equipment Exhibit G
EDUCATIONAL AND GENERAL (Continued)				
Hospital (Continued)				
Miscellaneous	45.00		45.00	
Ambulance Service	5,062.00		5,062.00	
Scholarships	(−7,476.90)		(−7,476.90)	
Residents' and Interns' Room Charges	29.16		29.16	
Interest	15,000.00		15,000.00	
Nurses Home	34,256.38		34,256.38	
Allowance for Doubtful Accounts	60,000.00		60,000.00	
Depreciation—Building	124,200.00		124,200.00	
" Equipment	169,021.78		169,021.78	
Transferred to University for support of School of Medicine	400,137.42		400,137.42	
Total Hospital	4,119,273.10	2,579,645.14	1,539,627.96	

Auxiliary Enterprises

Residence Halls				
Strong Hall	44,731.35	14,576.16	30,155.19	
Welling Hall	12,404.97	4,285.74	8,119.23	
Residents and Interns Hall	1,356.94		1,356.94	
Nurses Home	812.50		812.50	
	59,305.76	18,861.90	40,443.86	
Sorority Halls				
2112 G Street, NW.	465.23		465.23	
2129 G Street, NW.	2,694.39		2,694.39	
2131 G Street, NW.	620.65	200.00	420.65	
802 21st Street, NW.	588.78		588.78	
	4,369.05	200.00	4,169.05	
Services				
Book Store—University	346,593.89	46,436.31	296,566.86	3,590.72
" " Medical School	51,370.99	5,524.03	45,761.79	85.17
Lisner Auditorium	19,641.09	10,415.84	9,225.25	
Duplicating Bureau	390.13		390.13	
	417,996.10	62,376.18	351,944.03	3,675.89
TOTAL AUXILIARY ENTERPRISES	481,670.91	81,438.08	396,556.94	3,675.89

CURRENT EXPENSE (Continued)

For the Year Ended August 31, 1956

	Total	Salaries	Other Expense	Equipment Exhibit G
STUDENT AID				
Scholarships	45,999.50		45,999.50	
TOTAL EXPENSE	12,589,429.24	8,061,550.67	4,392,069.32	135,809.25
Less over head charged to various departments and included in "Other Expense" above	591,222.66			
TOTAL EXPENSE, ADJUSTED	11,998,206.58			

MISCELLANEOUS ASSETS AND LIABILITIES

August 31, 1956

			Exhibit A
TRUST NOTE RECEIVABLE			
N. Papanicolas—Secured by 1225 New York Avenue, NW. Due June 17, 1962. Interest 5%			76,462.50
ACCOUNTS RECEIVABLE			
Organized Research Funds			
Tuition and Other Fees		808,307.35	
Dormitory Rent		7,776.52	
U. S. Government—Patent, Trademark and Copyright Foundation		182.83	
Mechelechiv		39.75	
Educational and Institutional Cooperative Service		50.71	
Hospital		24.02	
Less Provision for Doubtful Accounts	462,174.54		
	110,000.00	352,174.54	1,168,555.72

MISCELLANEOUS ASSETS AND LIABILITIES (Continued)

August 31, 1956

EXHIBIT A

PREPAID EXPENSE			
University Supplies—Stockroom	36,772.00		
" " Book Store—University	61,417.00		
" " " " Medical	13,696.00		
" Travel	6,897.74		
" Army Logistics—Europe	6,315.05		
" Miscellaneous	7,682.84	132,780.63	
Hospital Supplies—Medical and Surgical	57,484.00		
" " Pharmacy	21,866.00		
" " Maintenance and Housekeeping	8,849.00		
" " Linens and Bedding	10,012.00		
" " Office	6,333.00		
" " Food	4,530.00		
" Insurance	25,328.07	134,402.07	267,182.70

Investments—Unrestricted Current Funds	%	Due	Value		
			Par	Market	Book
United States of America—Notes (at cost)	2¾	8-1-57	135,000	134,730.00	135,000.00

Notes Payable	
Riggs National Bank. Due October 1, 1956. Interest 4%	150,000.00

MISCELLANEOUS ASSETS AND LIABILITIES (Continued)

August 31, 1956

EXHIBIT A

INVESTMENTS—RESTRICTED CURRENT FUNDS	%	DUE	VALUE PAR	VALUE MARKET	VALUE BOOK
Bonds					
Federal Home Loan Banks—Series B	3⅝	2-15-57	60,000	60,000.00	60,000.00
Federal Land Banks—Farm Loan	2¼	5-1-59	50,000	48,050.00	48,468.75
" " " " "	2½	6-1-60	50,000	47,900.00	48,531.25
United States of America—Notes	1⅝	5-15-57	10,000	9,890.00	9,890.63
" Notes	2¾	8-1-57	65,000	64,870.00	64,939.06
" Notes	2⅞	6-15-58	63,000	62,433.00	62,672.81
" Treasury	2⅜	11-15-60	25,000	23,700.00	23,929.69
" Treasury	2¼	1956-59	25,000	24,125.00	24,265.63
" Treasury	2¼	12-15-62	20,000	18,760.00	18,968.75
" Treasury	2½	12-15-58	25,000	24,525.00	24,617.19
" Treasury	2¼	6-15-62	60,000	56,340.00	56,943.75
" Treasury	2½	8-15-63	50,000	47,150.00	47,750.00
" Treasury	2¾	9-15-61	80,000	77,280.00	78,275.00
" Savings K	2.76	11-1-66	50,000	48,950.00	50,000.00
				613,973.00	619,252.51
	%		SHARES		
Stock—Preferred					
U. S. Rubber Co.—Non-Cumulative First	8		100	15,700.00	16,662.50
				629,673.00	635,915.01

Note: Book value of investments represents cost or the fair market value at date of acquisition.

ASSETS OF LOAN FUNDS

August 31, 1956

Funds	Total	Cash	Loans Receivable
Home Economics Loan Fund	382.35	382.35	
Kellogg Loan Fund	19,759.08	3,947.69	15,811.39
Law Association Loan Fund	1,867.43	1,053.14	814.29
Pfizer Loan Fund	1,026.33	76.33	950.00
Schoenfeld Loan Fund	1,960.77	1,576.77	384.00
School of Medicine Loan Fund	6,066.37	3,766.37	2,300.00
Sutherland Loan Fund	1,453.10	203.10	1,250.00
University Loan Fund	8,812.76	8,405.76	407.00
War Loan Fund	4,819.03		4,819.03
	46,147.22	19,411.51	26,735.71

ASSETS OF ENDOWMENT FUNDS

August 31, 1956

CONSOLIDATED ENDOWMENT FUNDS

Bonds	Description	%	Due	Value		
				Par	Market	Book
American Telephone and Telegraph Co.	Debenture	3⅛	1990	53,000	52,470.00	54,457.50
Atchison, Topeka and Santa Fe Ry. Co.	General Mortgage	4	1995	2,000	2,140.00	2,000.00
Boston Edison Co.	First Mortgage D	3⅛	1982	30,000	27,300.00	30,419.00
C. I. T. Financial Corporation	Debenture	3⅜	1970	35,000	34,650.00	34,535.00
Commonwealth Edison Co.	First Mortgage R	3½	1986	50,000	47,500.00	49,437.50
Consolidated Edison Co.	First and Refunding L	3⅜	1986	50,000	48,500.00	49,750.00
Consumers Power Co.	First Mortgage	3¼	1987	30,000	28,500.00	30,796.00
Dow Chemical Co.	Convertible Subordinated Deb	3	1982	15,000	24,900.00	15,196.00
Federal Intermediate Credit Bank	Debenture	3	1956	60,000	60,000.00	60,000.00
Federal Land Banks	Consolidated Farm Loan	2¾	1958	75,000	73,650.00	74,754.00
Federal National Mortgage Association	Notes	2½	1958	50,000	49,000.00	49,780.00
General Electric Co.	Debenture	3½	1976	50,000	49,500.00	50,125.00
General Motors Acceptance Corp.	Debenture	3½	1972	40,000	38,800.00	40,000.00
Great Northern Railway Co.	General Mortgage D	4½	1976	25,000	26,250.00	25,140.00
Illinois Bell Telephone Co.	First Mortgage A	2¾	1981	30,000	26,100.00	28,200.00
National Container Corporation	Sinking Fund Debenture	4⅝	1966	18,000	18,180.00	18,000.00
New Jersey Bell Telephone Co.	Debenture	3⅛	1988	25,000	24,000.00	25,220.00
New York Central Railroad Co.	Refunding and Improvement A	4½	2013	30,000	21,900.00	24,870.00
Pennsylvania Railroad Co.	General Mortgage A	4¼	1984	25,000	24,500.00	26,279.00
" " "	Consolidated Mortgage	4½	1960	1,000	1,020.00	1,000.00

Potomac Electric Power Co.	*First Mortgage*	$3\frac{5}{8}$	*1991*	*40,000*	*38,400.00*	*39,600.00*
Radio Corporation of America	*Convertible Subordinated Deb.*	$3\frac{1}{2}$	*1980*	*50,000*	*53,500.00*	*55,650.00*
R. J. Reynolds Tobacco Co.	*Debenture*	*3*	*1973*	*30,000*	*28,200.00*	*30,000.00*
Service Pipe Line Co	*Sinking Fund Debenture*	*3.2*	*1982*	*25,000*	*23,500.00*	*25,000.00*
Southern California Edison Co.	*Convertible Debenture*	$3\frac{1}{4}$	*1970*	*5,000*	*5,650.00*	*5,560.00*
Southern Railway Co.	*First Consolidated Mortgage*	*5*	*1994*	*1,000*	*1,210.00*	*1,208.00*
State Loan and Finance Corp.	*Sinking Fund Debenture*	$3\frac{3}{4}$	*1966*	*5,000*	*4,950.00*	*5,000.00*
" " " " "	*Sinking Fund Subordinated Deb.*	*5*	*1960*	*20,000*	*20,000.00*	*20,000.00*
Tennessee Gas Transmission Co.	Debenture	$4\frac{1}{4}$	1974	24,000	23,760.00	24,432.00
United Gas Corporation	Sinking Fund Debenture	$4\frac{3}{8}$	1972	18,000	18,360.00	18,336.20
United States of America	Treasury	$2\frac{1}{4}$	1959-62	30,000	28,170.00	30,000.00
"	Treasury	$2\frac{1}{2}$	1961	56,000	53,368.00	55,665.00
"	Treasury	$2\frac{1}{2}$	1967-72	8,000	7,288.00	7,813.00
"	Savings G	$2\frac{1}{2}$	2-58	10,000	9,820.00	10,000.00
"	Savings G	$2\frac{1}{2}$	7-58	35,000	34,265.00	35,000.00
"	Savings F	2.53	11-58	200	183.00	148.00
"	Treasury Bills	2.6	1956	75,000	74,625.00	74,506.50
"	Treasury B	$2\frac{3}{4}$	1975-80	10,000	9,170.00	10,000.00
"	Savings K	2.76	10-66	25,000	24,475.00	25,000.00
"	Savings K	2.76	11-66	50,000	48,950.00	50,000.00
"	Savings K	2.76	1-67	50,000	48,950.00	50,000.00
"	Notes	$2\frac{3}{4}$	8-57	56,000	55,888.00	56,000.00
Washington Gas Light Co.	General Mortgage	$2\frac{7}{8}$	6-58	20,000	19,820.00	20,000.00
West Shore Railroad Co.	Guaranteed First Mortgage Reg.	5	1960	6,000	6,180.00	6,150.00
		4	2361	26,000	16,640.00	22,628.75
					1,334,182.00	1,367,654.45

ASSETS OF ENDOWMENT FUNDS (Continued)

August 31, 1956

CONSOLIDATED ENDOWMENT FUNDS (Continued)

Stocks—Preferred	Description	Rate or %	Shares	Value	
				Market	Book
American Smelting and Refining Co.	Cumulative	7	120	18,000.00	17,496.70
Appalachian Electric Power Co.	Cumulative	4½	100	10,100.00	10,600.00
Atchison, Topeka and Santa Fe Ry. Co.	Non-Cumulative	5	600	6,360.00	5,987.50
Cleveland and Pittsburgh R. R. Co.	Guaranteed	7	100	7,200.00	8,500.00
Connecticut Light and Power Co.	Cumulative	$2.20	400	20,000.00	21,008.32
Consolidated Edison Co. of New York	Cumulative	$5.00	300	31,800.00	32,386.17
Corning Glass Works	Cumulative	3½	240	22,560.00	24,000.00
Detroit, Hillsdale and S. W. R. R. Co.	Guaranteed	4	163	10,595.00	10,432.00
General Motors Corporation	Cumulative	$3.75	200	18,400.00	20,000.00
" " "	Cumulative	$5.00	100	11,700.00	12,525.25
General Shoe Corporation	Cumulative	$3.50	50	4,350.00	5,180.00
Gold and Stock Telegraph Co.	Guaranteed	6	100	15,800.00	11,700.00

Gulf Power Co.	Cumulative	4.64	100	10,100.00	10,300.00
Hecht Co.	Cumulative	3¾	50	4,100.00	5,150.00
H. J. Heinz Co.	Cumulative	3.65	200	19,400.00	20,550.00
International Harvester Co.	Cumulative	7	100	15,200.00	18,204.43
Marine Midland Corporation	Cumulative Convertible, Par Value $50	4	100	5,300.00	5,338.50
May Department Stores	Cumulative	$3.75	200	18,000.00	20,700.00
McCrory Stores Corporation	Cumulative Convertible	3½	200	15,200.00	20,670.70
Merck and Co.	Cumulative	$3.50	105	8,820.00	10,497.50
Oliver Corporation	Cumulative Convertible	4½	200	17,800.00	21,520.34
Pacific Gas and Electric Co.	Redeemable First, Par Value $25	4.80	1000	26,000.00	27,250.00
Panhandle Eastern Pipe Line Co.	Cumulative	4	200	19,600.00	20,172.40
Pennsylvania Electric Co.	Cumulative C	3.7	200	16,800.00	20,500.00
Philadelphia Electric Co.	Cumulative	3.8	100	9,400.00	10,270.00
Potomac Electric Power Co.	Cumulative A, Par Value $50	3.6	311	12,751.00	16,033.00
Public Service Electric and Gas Co.	Dividend Preference	$1.40	550	16,500.00	15,406.87
R. J. Reynolds Tobacco Co.	Cumulative	3.6	100	8,300.00	10,017.84
Rogers, George A., and Co.	Cumulative First	$6.00	1	100.00	100.00
Virginia Electric and Power Co.	Cumulative	$4.04	300	28,200.00	30,681.00
				428,636.00	463,178.52

ASSETS OF ENDOWMENT FUNDS (Continued)

August 31, 1956

CONSOLIDATED ENDOWMENT FUNDS (Continued)

Stocks—Common	Shares	Value	
		Market	Book
Allis-Chalmers Manufacturing Co.	1,000	33,000.00	21,347.00
American Cyanamid Co.	500	21,500.00	22,252.44
American Gas and Electric Co.	1,100	42,900.00	13,607.91
American Metal Co.	1,550	48,050.00	45,348.44
American Telephone and Telegraph Co.	296	54,168.00	46,421.56
Chrysler Corporation	220	15,180.00	12,947.75
Coca-Cola Co.	200	22,200.00	24,294.55
Columbian Carbon Co.	300	15,000.00	14,215.85
Commercial Credit Co.	500	25,500.00	20,153.14
Commonwealth Edison Co.	1,184	48,544.00	29,561.74
Continental Can Co.	88	4,400.00	3,348.32
Continental Illinois National Bank and Trust Co. of Chicago	404	35,148.00	16,884.57
Continental Insurance Co.	400	18,400.00	18,088.35
Continental Oil Co.	420	51,660.00	9,454.95

du Pont (E. I.) de Nemours and Co., Inc.	56	11,480.00	4,907.00
Eastman Kodak Co.	330	51,020.00	13,196.72
First National City Bank of New York	57	3,762.00	4,170.76
Ford Motor Co.	500	29,000.00	32,250.00
General American Transportation Co.	400	26,400.00	27,060.34
General Electric Co.	300	18,300.00	5,405.00
General Motors Corporation	3,457	162,479.00	39,603.99
Goodyear Tire and Rubber Corporation	999	78,921.00	16,416.57
International Nickel Co. of Canada, Ltd.	200	21,200.00	12,035.25
Kennecott Copper Corporation	300	39,900.00	18,227.50
Marine Midland Corporation	1,700	28,900.00	20,875.30
Mergenthaler Linotype Co.	12	684.00	588.00
Monsanto Chemical Co.	612	24,480.00	18,238.51
National Fuel Gas Co.	1,650	33,000.00	34,979.49
New York Air Brake Co.	400	11,600.00	8,646.84
Ohio Oil Co.	600	23,400.00	20,218.97
Panhandle Eastern Pipe Line Co.	200	19,000.00	14,684.95
Peoples Drug Stores	400	13,600.00	14,585.20
Pfizer, Chas., and Co.	357	16,065.00	15,219.02
Phelps Dodge Corporation	600	39,600.00	19,207.25

ASSETS OF ENDOWMENT FUNDS (Continued)

August 31, 1956

CONSOLIDATED ENDOWMENT FUNDS (Continued)

	Shares	Value	
		Market	Book
Stocks—Common (Continued)			
Reliable Stores	550	8,800.00	8,721.43
R. J. Reynolds Tobacco Co.	100	5,400.00	5,112.50
Riggs National Bank	92	45,080.00	28,339.00
Security Storage Co.	335	10,050.00	5,058.50
Socony Mobil Oil Co.	2,104	113,616.00	28,444.97
Southern California Edison Co.	737	36,113.00	20,573.66
Standard Oil Co. of California	1,576	78,800.00	16,171.02
Sunray Mid-Continent Oil Co.	1,155	32,340.00	25,300.00
Travelers Insurance Co.	1,000	71,000.00	16,045.68
Union Carbide and Carbon Corporation	45	5,400.00	3,802.50
United Gas Corporation	915	29,280.00	16,922.35
Woolworth, F. W., Co.	400	18,400.00	19,657.52
Wm. Wrigley Jr., Co.	10	930.00	707.50
		1,523,450.00	833,309.86
Total Bonds and Stocks		3,286,268.00	2,664,142.83

Trust Notes Receivable			
Crowe, F. C.—Secured by 160 acres of land in Pemiscot County, Missouri.			
Due $5,954.46 each December 15 until paid in full			
Kersey, A. P.—Secured by 480 acres of land in Pemiscot County, Missouri.			
Due $12,500 each December 15 until paid in full			
		%	
		4	17,863.39
		4	37,500.00
			55,363.39
Real Estate—Strong Hall, 620 21st Street, NW. Lots 19-20-818-819, Square 80			199,981.00
Accounts Receivable—Accrued Interest Purchased			1,755.06
Cash			6,622.06
Totals { Consolidated Endowment Funds	2,828,274.35		
Totals { Reserve for Protection of Consolidated Endowment Funds Investments	99,589.99		2,927,864.34

ASSETS OF ENDOWMENT FUNDS (Continued)

August 31, 1956

SCOTTISH RITE FUND

Bonds	Description	%	Due	Value Par	Value Market	Value Book
American Telephone and Telegraph Co..	Debenture	2¾	1980	25,000	21,000.00	25,000.00
Federal National Mortgage Association	Notes ML 1958A	2½	1958	50,000	49,000.00	50,000.00
Lexington and Eastern Railway Co...	First Mortgage	5	1965	12,000	13,080.00	12,480.00
Northern Pacific Railway Co.	Prior Lien Railway and Land Grant	4	1997	25,000	25,750.00	26,610.00
State Loan and Finance Co.	Sinking Fund Debentures	3¾	1966	20,000	19,800.00	20,000.00
" " " " "	Sinking Fund Subordinated Deb.	5	1960	5,000	5,000.00	5,000.00
Tennessee Gas Transmission Co.	Debenture	4¼	1974	15,000	14,850.00	15,270.00
United States of America	Treasury	2¼	1959–62	72,000	67,608.00	72,102.00
"	Savings G	2½	9–62	40,000	38,080.00	40,000.00
"	Treasury B	2¾	1975–80	25,000	22,925.00	25,000.00
"	Savings K	2.76	10–66	100,000	97,900.00	100,000.00
"	Savings K	2.76	1–67	50,000	48,950.00	50,000.00
"	Treasury	3¼	1978–83	50,000	49,950.00	50,000.00
Washington Gas Light Co....	General Mortgage	5	1960	4,000	4,120.00	4,189.00
West Shore Railroad Co.	Guaranteed First Mortgage Regist.	4	2361	14,000	8,960.00	12,360.00
					486,973.00	508,011.00

Stocks—Preferred		Rate or %	Shares		
Baltimore Gas and Electric Co.	Cumulative C	4	130	12,740.00	13,312.73
Celanese Corporation of America	Cumulative	4½	200	13,400.00	20,081.50
General Motors Corporation	Cumulative	$3.75	40	3,720.00	4,000.00
General Shoe Corporation	Cumulative	$3.50	50	4,350.00	5,120.50
Gulf Power Co.	Cumulative	4.64	100	10,100.00	10,300.00
Hecht Co.	Cumulative	3¾	150	12,300.00	15,450.00
Illinois Power Co.	Cumulative, Par Value $50	4.26	400	19,600.00	20,600.00
International Harvester Co.	Cumulative	7	50	7,600.00	9,124.08
Montgomery Ward and Co.	Cumulative, Class A	$7.00	100	15,900.00	20,585.65
Pacific Telephone and Telegraph Co.	Cumulative	6	200	27,200.00	28,930.43
Philadelphia Electric Co.	Cumulative	3.8	100	9,400.00	10,270.00
Philip Morris and Co., Ltd., Inc.	Cumulative	4	138	11,454.00	14,007.00
Potomac Electric Power Co.	Cumulative A, Par Value $50	3.6	300	12,300.00	15,525.00
R. J. Reynolds Tobacco Co.	Cumulative	3.6	200	16,600.00	20,018.77
				176,664.00	207,275.66

ASSETS OF ENDOWMENT FUNDS (Continued)

August 31, 1956

SCOTTISH RITE FUND (Continued)

	Shares	Value	
		Market	Book
Stocks—Common			
American Telephone and Telegraph Co.	250	45,750.00	38,889.36
Cincinnati Milling Machine Co.	1,000	48,000.00	18,609.10
Commonwealth Edison Co.	1,014	41,574.00	23,486.85
Continental Oil Co.	1,000	123,000.00	15,725.25
Ford Motor Co.	150	8,700.00	9,675.00
General Electric Co.	1,200	73,200.00	17,210.00
Goodyear Tire and Rubber Co.	906	71,574.00	11,336.21
Heckt Co.	500	16,000.00	14,562.50
International Nickel Co. of Canada, Ltd.	300	31,800.00	13,032.50
Montgomery Ward and Co.	1,500	61,500.00	32,577.25
New York State Electric and Gas Co.	550	20,350.00	22,025.15
Panhandle Eastern Pipe Line Co.	150	14,250.00	10,963.94
Pfizer, Chas., and Co.	119	5,355.00	5,073.00
Riggs National Bank	150	73,500.00	32,625.00
Standard Oil Co. of California	486	24,300.00	2,591.38
Standard Oil Co. of New Jersey	3,216	180,096.00	37,854.29
Union Carbide and Carbon Corporation	900	108,000.00	25,122.50
United Gas Corporation	770	24,640.00	13,851.66
		971,589.00	345,210.94
Total Bonds and Stocks		1,635,226.00	1,060,497.60
Cash			(−509.78)
Totals {Scottish Rite Fund		1,000,000.00	
{Reserve for Protection of Scottish Rite Fund Investments		59,987.82	1,059,987.82

SUMMARY OF ASSETS OF ENDOWMENT FUNDS

August 31, 1956

INVESTMENTS	TOTAL	CONSOLIDATED	SCOTTISH RITE
Bonds	1,875,665.45	1,367,654.45	508,011.00
Preferred Stocks	670,454.18	463,178.52	207,275.66
Common Stocks	1,178,520.80	833,309.86	345,210.94
Trust Notes	55,363.39	55,363.39	
Real Estate	199,981.00	199,981.00	
Account Receivable	1,755.06	1,755.06	
	3,981,739.88	2,921,242.28	1,060,497.60
CASH	6,112.28	6,622.06	(−509.78)
TOTALS—EXHIBIT A	3,987,852.16	2,927,864.34	1,059,987.82

Note—Book value of investments represents cost or the fair market value at date of acquisition except real estate which is stated at cost less depreciation of building.

ENDOWMENT FUNDS—HELD IN TRUST BY OTHERS

August 31, 1956

Funds	Trustees	Book value
Andrews Scholarship Fund	American Security and Trust Co.	5,194.95
Coope Unrestricted Fund	Riggs National Bank	21,409.17
Fry Professorship Fund	National Savings and Trust Co.	106,067.98
Harvey Scholarship Fund	Riggs National Bank	4,650.63
Sanders Fellowship Fund	National Savings and Trust Co.	210,957.74
Sanders Hospital Fund	Washington Home for Foundlings	29,151.03
Sharpe School of Medicine Fund	National Savings and Trust Co.	8,216.79
Spencer Scholarship Fund	Northern Trust Co.	7,422.20
Total—Exhibit A		393,070.49

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August 31, 1956

CONSOLIDATED PLANT FUNDS

	Description	%	Due	Value Par	Value Market	Value Book
Bonds						
United States of America	Savings G	2½	10–57	500	491.00	500.00
"	Savings G	2½	4–61	3,600	3,470.00	3,600.00
"	Savings F	2.53	12–57	100	95.00	86.10
"	Savings K	2.76	11–66	4,000	3,916.00	4,000.00
					7,972.00	8,186.10
Cash					71,442.20	71,442.20
Totals					79,414.20	79,628.30

LAW CENTER FUND

	Description	%	Due	Par	Market	Book
Bonds						
C I T Financial Corporation	Debenture	2⅝	1959	25,000	24,250.00	24,813.00
Federal Land Banks	Consolidated Farm Loan	2¼	1960	15,000	14,250.00	14,694.00
Federal National Mortgage Association	Notes ML 1958A	2½	1–58	25,000	24,500.00	24,848.00
United States of America	Savings G	2½	4–61	15,000	14,460.00	14,415.00
"	Savings F	2.53	1–58	100	95.00	91.40
					77,555.00	78,861.40
Stock—Common				Shares		
Houston Oil Co. of Texas				40	160.00	160.00
Cash					18,681.71	18,681.71
Totals					96,396.71	97,703.11

ASSETS OF PLANT FUNDS (Continued)

August 31, 1956

PAIRO FUND

	Description	%	Due	Par	Value Market	Value Book
Bonds						
Morris and Essex Railroad Co.	First and Refunding Mortgage	3½	2000	6,000	3,780.00	4,636.00
Southern Pacific Co. (Oregon Lines)	First Mortgage A	4½	1977	5,000	4,950.00	5,121.00
United States of America	Treasury Notes B	1⅝	1957	50,000	49,450.00	50,000.00
"	Treasury	2⅜	1958	50,000	49,000.00	49,218.75
"	Treasury	2½	1964-69	500	457.00	500.00
"	Savings G	2½	11-56	300	298.00	300.00
"	Savings G	2½	10-57	1,200	1,178.00	1,178.40
"	Savings K	2.76	9-66	200,000	195,800.00	200,000.00
"	Savings K	2.76	1-67	27,500	26,923.00	27,500.00
"	Treasury	3¼	1978-83	1,000	999.00	1,000.00
					332,835.00	339,454.15
Stocks—Common				Shares		
American Security and Trust Co.				220	9,680.00	7,857.40
First National City Bank of New York				63	4,158.00	2,859.96
Mergenthaler Linotype Co.				300	17,100.00	15,806.25
Pennroad Corporation				105	1,575.00	1,300.00
Riggs National Bank				62	30,380.00	19,543.00
					62,893.00	47,366.61
Account Receivable—Accrued Interest Purchased					12.50	12.50
Cash					62.34	62.34
Totals					395,802.84	386,895.60

Bonds					
United States of America—Notes	2¾	8-57	113,000	112,774.00	113,035.31
Cash				214.69	214.69
Totals				112,988.69	113,250.00

SUMMARY OF ASSETS OF PLANT FUNDS

August 31, 1956

Investments	Total	Consolidated	Ford	Law Center	Pairo
Bonds	539,536.96	8,186.10	113,035.31	78,861.40	339,454.15
Common Stocks	47,526.61			160.00	47,366.61
Account Receivable	12.50				12.50
	587,076.07	8,186.10	113,035.31	79,021.40	386,833.26
Cash	90,400.94	71,442.20	214.69	18,681.71	62.34
Totals—Exhibit A	677,477.01	79,628.30	113,250.00	97,703.11	386,895.60

Note—Book value of investments represents cost or the fair market value at date of acquisition.

LAND AND BUILDINGS

For the Year Ended August 31, 1956

Building or Location	Lot	Square	Year Acquired or Erected	Balance August 31, 1955	Net Additions	Balance August 31, 1956
Biological Sciences Building C	Part of 834	102	1914–35	151,129.97		151,129.97
Book Store	Part of 843	79	1949	48,105.49		48,105.49
Chapin Hall	Part of 838	79	1948	85,301.23		85,301.23
Corcoran Hall (Schedule 8A)	Part of 834	102	1919–24	327,481.92		327,481.92
Draper Hall—Part of Square 56			1948	50,000.00		50,000.00
Faculty Parking Lot	14–16–17–18					
"	19–20–23–24					
"	25–26–27–28–29					
"	800–801–802–805					
"	823–828–829–830					
"	832–833–834	56	1936	251,431.05		251,431.05
Gymnasium	Part of 834	102	1924–25	58,331.44		58,331.44
Hall of Government	Part of 841	79	1918–38	242,035.63	72,275.76	314,311.39
Hospital	Entire Square	54	1945	7,614,698.53	51,768.11	7,666,466.64
Law Center Building			1955	1,200.00		1,200.00
Lisner Auditorium	828–838–843	79	1929–41	879,976.91		879,976.91
Lisner Library	Part of 834	102	1912–39	384,029.52		384,029.52
Mechanical Laboratory	Part of 834	102	1923–30	57,583.87		57,583.87
Monroe Hall	844	79	1938–51	624,208.50	72,275.74	696,484.24

Nurses Home (Schedule 8A)	*806 thru 811*	*55*	*1947*	*401,500.00*		*401,500.00*
Parking Lot—2314 I St., NW	*831*	*41*	*1945–53*	*587,787.43*		*587,787.43*
Pharmacology Laboratory	*27–28–816–817*	*79*	*1944*	*100,091.18*		*100,091.18*
Physics Laboratory	*Part of 843*	*79*	*1947*	*26,075.12*		*26,075.12*
President's Office	*Part of 834*	*102*	*1936*	*11,700.00*		*11,700.00*
School of Medicine (Schedule 8A)	*43*	*250*	*1882–1932*	*995,706.34*		*995,706.34*
Shop, Stockroom	*53*	*101*	*1943*	*26,761.24*		*26,761.24*
Social Sciences Building D	*Part of 834*	*102*	*1922–36*	*543,305.70*		*543,305.70*
Sorority Hall—2112 G Street, NW	*816*	*80*	*1948*	*30,000.00*		*30,000.00*
" 2129 G Street, NW	*805*	*79*	*1936*	*36,989.72*		*36,989.72*
" 2131 G Street, NW	*Part of 8*	*79*	*1935*	*25,500.00*		*25,500.00*
" 802 21st Street, NW	*35*	*77*	*1938*	*13,000.00*		*13,000.00*
Staughton Hall	*834–835*	*79*	*1941*	*62,574.67*		*62,574.67*
Stockton Hall (Schedule 8A)	*Part of 834*	*102*	*1920–25*	*279,325.93*		*279,325.93*
Student Activities Building	*41*	*79*	*1947*	*75,000.00*		*75,000.00*
Student Union Building	*804–836*	*79*	*1947–48*	*528,057.96*		*528,057.96*
Tompkins Engineering Building	*15–843*	*56*	*1953*	*48,906.41*	*528,047.31*	*576,953.72*
Tompkins Engineering Building Site	*15–843*	*56*	*1936*	*94,581.28*		*94,581.28*
Warwick Memorial Building*	*Entire Square*	*39*	*1948–52*	*455,116.21*	*6,553.97*	*461,670.18*
Welling Hall	*15*	*55*	*1947*	*209,047.72*		*209,047.72*

LAND AND BUILDINGS—(Continued)

For the Year Ended August 31, 1956

Building or Location	Lot	Square	Year Acquired or Erected	Balance August 31, 1955	Net Additions	Balance August 31, 1956
G Street, NW—1910	C	121	1949	20,000.00		20,000.00
" 2002	27	103	1949	33,600.00		33,600.00
" 2024	16	103	1922	14,955.00		14,955.00
" 2026	15	103	1929	15,074.96		15,074.96
" 2033	Part of 834	102	1922	32,500.00		32,500.00
" 2106	817	80	1937	19,000.00		19,000.00
" 2108	41	80	1946	31,500.00		31,500.00
" 2110	40	80	1949	69,479.23		69,479.23
" 2114	815	80	1949	47,250.00		47,250.00
" 2116	A	80	1946	20,500.00		20,500.00
" 2118	B	80	1946	17,500.00		17,500.00
" 2135	807	79	1943	14,000.00		14,000.00
" 2222	25	57	1948	8,800.00		8,800.00
" 2313-15-17-19-21	803-829	42	1947	23,400.00		23,400.00
" 2220	26	57	1956		500.00	500.00
H Street, NW—1909	800	119	1948	32,500.00		32,500.00
" 1911-13	3	119	1948	67,711.70		67,711.70
" 1921	802	119	1952	32,500.00		32,500.00
" 1923	803	119	1949	38,000.00		38,000.00
" 2000	39	102	1956		135,000.00	135,000.00
" 2001 (Schedule 8A)	55-56 800 thru 805	101	1956		180,000.00	180,000.00

"	2011	806	101	1943	13,000.00		13,000.00
"	2017	810	101	1954	25,000.00		25,000.00
"	2020	Part of 834	102	1922	98,516.71		98,516.71
"	2023	51	101	1954	12,000.00		12,000.00
"	2025	52	101	1945	21,000.00		21,000.00
"	2027	813	101	1941	11,000.00		11,000.00
"	2029	814	101	1945	11,500.00		11,500.00
"	2031	815	101	1948	13,000.00		13,000.00
"	2037	817	101	1940	23,500.00		23,500.00
"	2107-09	800-801	77	1956		34,000.00	34,000.00
"	2113	802-804-805	77	1940	42,431.25		42,431.25
"	2125	808	77	1954	21,000.00		21,000.00
"	2127	809	77	1946	7,500.00		7,500.00
"	2136	53 thru 59	79	1951	85,000.00		85,000.00
"	2137 (Schedule 8A)	810-811	77	1948	30,500.00		30,500.00
"	2142	D	79	1935	1,500.00		1,500.00
"	2142½	815	79	1940	3,000.00		3,000.00
"	2209	804	55	1945	6,650.00		6,650.00
"	2211	16	55	1948	16,125.00		16,125.00
"	2213	17	55	1946	13,000.00		13,000.00
"	2217	18-19-805	55	1944	32,500.00		32,500.00
"	2300	817	42	1942	10,750.00		10,750.00
"	2308	43	42	1948	7,900.00		7,900.00
"	2312	814	42	1948	7,000.00		7,000.00
"	2316	812	42	1947	9,600.00		9,600.00
"	2318	811	42	1955	7,000.00		7,000.00

LAND AND BUILDINGS—(Continued)

For the Year Ended August 31, 1956

Building or Location	Lot	Square	Year Acquired or Erected	Balance August 31, 1955	Net Additions	Balance August 31, 1956
I Street, NW—2012	829-830-831	101	1945	68,000.00		68,000.00
" 2018	21	101	1946	50,000.00		50,000.00
" 2038	840	101	1942	10,000.00		10,000.00
" 2106	27	77	1947	11,800.00		11,800.00
" 2112	55-56	77	1947	12,500.00		12,500.00
" 2136	826	77	1948	15,000.00		15,000.00
" 2138	825	77	1945	5,000.00		5,000.00
" 2204	22	55	1949	12,000.00		12,000.00
19th Street, NW—808	20	119	1949	30,000.00		30,000.00

20th Street, NW	700	26	102	1931	17,500.00	17,500.00
"	708	23	102	1950	36,870.03	36,870.03
"	712	42	102	1929	14,240.00	14,240.00
"	714	41	102	1930	14,500.00	14,500.00
"	716	40	102	1929	13,500.00	13,500.00
"	718	828-830	102	1929	20,000.00	20,000.00
21st Street, NW	604	23	80	1946	13,000.00	13,000.00
"	606-08	21-22	80	1935	12,500.00	12,500.00
"	713-15	Part of 834	102	1929	24,000.00	24,000.00
"	714	Part of 841	79	1931	40,000.00	40,000.00
"	716	Part of 841	79	1933	8,885.00	8,885.00
"	718	Part of 841	79	1939	16,422.00	16,422.00
"	810	31	77	1938	9,000.00	9,000.00
"	812	841	77	1954	21,000.00	21,000.00
"	814	840	77	1944	13,000.00	13,000.00

LAND AND BUILDINGS—(Continued)

For the Year Ended August 31, 1956

Building or Location	Lot	Square	Year Acquired or Erected	Balance August 31, 1955	Net Additions	Balance August 31, 1956
22nd Street, NW—715	24	79	1939	8,190.00		8,190.00
" 717	25	79	1940	10,143.00		10,143.00
" 719	810	79	1952	20,000.00		20,000.00
" 725	812-813	79	1938	8,750.00		8,750.00
" 727	814	79	1937	4,750.00		4,750.00
" 731	34	79	1945	7,600.00		7,600.00
" 800-02	802-803	55	1946	18,500.00		18,500.00
" 804	801	55	1956		16,500.00	16,500.00
" 806	800	55	1945	9,000.00		9,000.00
" 808	C	55	1946	14,000.00		14,000.00
" 810	839	55	1948	18,750.00		18,750.00
" 817	817-818-819	77	1948	27,800.00	8,000.00	35,800.00
" 818	831	55	1952	25,000.00		25,000.00
" 820	830	55	1945	7,000.00		7,000.00
" 822	829	55	1947	9,250.00		9,250.00
" 909	815	75	1946	11,000.00		11,000.00
" 911	816	75	1950	12,000.00		12,000.00
" 921	821	75	1948	12,500.00		12,500.00

23rd Street, NW—611-13		29-821					
"	706	822-824-825	57	1948	13,500.00		13,500.00
"	716	827	42	1942	3,675.00		3,675.00
"	718	825	42	1944	7,425.00		7,425.00
"	734	824	42	1949	11,000.00		11,000.00
"	736	819	42	1942	4,500.00		4,500.00
"	908	818	42	1942	3,000.00		3,000.00
"	910	30	40	1949	17,750.00		17,750.00
		29	40	1953	16,500.00		16,500.00
24th Street, NW—737-39		808	42	1947	11,440.00		11,440.00
Pennsylvania Avenue, NW—							
"	1900-02-04-06-08	12-19	119	1949	180,000.00		180,000.00
"	1914-16	812	119	1950	70,000.00		70,000.00
"	1920	813	119	1949	70,000.00		70,000.00
"	2100	800-801-840	75	1945	103,000.00		103,000.00
"	2130	831	75	1950	30,000.00		30,000.00

LAND AND BUILDINGS—(Continued)

For the Year Ended August 31, 1956

Building or Location	Lot	Square	Year Acquired or Erected	Balance August 31, 1955	Net Additions	Balance August 31, 1956
New Hampshire Avenue, NW—905	813	40	1949	9,500.00		9,500.00
939	818	40	1953	11,000.00		11,000.00
				17,670,024.85	1,104,920.89	18,774,945.74
Less Depreciation—Hospital				420,000.00	60,000.00	480,000.00
				17,250,024.85	1,044,920.89	
TOTAL—EXHIBIT A						18,294,945.74

* The University has a contingent asset represented by an option to purchase from The Washington Home for Foundlings land valued at $55,946.00 for $1.00 plus the fair market value, less depreciation, of the portion of the Warwick Memorial Building, deeded to The Washington Home for Foundlings, at the time of the exercise of such option.

Note—Land and buildings acquired prior to 1921 are stated at appraised values determined by the Washington Real Estate Board June 18, 1921, except for the Medical School property which is stated at an appraised value determined by the Board of Trustees, August 31, 1935. Additions subsequent to June 18, 1921, are stated at cost or at appraised values at dates of gifts. In 1949 the Buildings and Lands Committee of the Board of Trustees appraised the Hospital Building at $6,000,000.00 and the land at $1,389,564.

TRUST NOTES PAYABLE

	Balance August 31, 1955	Additions	Deductions	Balance August 31, 1956
CUMBERLAND, HENRY A.				
Secured by 2135 H Street, NW. Due $100 per month including interest at 4½%	10,998.67	.....	7,876.57	3,122.10
EQUITABLE LIFE ASSURANCE SOCIETY				
Secured by Nurses Home. Due $7,875 each May 1 and November 1 including interest at 4%	157,459.25	.....	9,546.14	147,913.11
PERPETUAL BUILDING ASSOCIATION				
Secured by 2001 H St., NW. Due $675 per month including interest at 5%	.....	83,034.74	.....	83,034.74
RIGGS NATIONAL BANK				
Secured by School of Medicine Buildings. Due February 21, 1960. Interest 4%	350,000.00	.....	.....	350,000.00
Secured by Corcoran Hall and Stockton Hall. Due October 30, 1957. Interest 4%	100,000.00	.....	.....	100,000.00
	618,457.92	83,034.74	17,422.71	
TOTAL—EXHIBIT A				684,069.95

SCHEDULE 8A

EQUIPMENT

For the Year Ended August 31, 1956

	Balance August 31, 1955	Net Additions	Balance August 31, 1956
Administration	252,862.35	37,931.72	290,794.07
Book Stores	9,721.07	3,675.89	13,396.96
Cancer Clinic	54,158.46	3,566.87	57,725.33
Faculty Dining Room	2,284.48	.....	2,284.48
Gymnasium	2,927.37	.....	2,927.37
Hospital	1,331,381.28	76,630.66	1,408.011.94
Human Resources Laboratory	48,324.48	.....	48,324.48
Instruction—General	182,261.69	6,254.78	188,516.47
" Law School	4,507.56	.....	4,507.56
" School of Engineering	99,967.38	37,410.91	137,378.29
" School of Medicine	115,263.47	17,143.07	132,406.54
" School of Pharmacy	23,339.39	1,110.77	24,450.16
Interns' Residence	4,302.62	.....	4,302.62
Library Books—General	276,547.41	30,040.56	306,587.97
" Hospital	2,367.22	.....	2,367.22
" Law School	135,123.13	12,001.15	147,124.28
" School of Medicine	43,064.16	7,145.79	50,209.95

Lisner Auditorium	94,844.28	.....	94,844.28
Lisner Library	46,405.76	12,640.85	59,046.61
Motor Vehicles	4,352.01	.....	4,352.01
Nurses Home	9,710.60	.....	9,710.60
Strong Hall	18,200.00	.....	18,200.00
Student Union	36,406.09	.....	36,406.09
Welling Hall	30,805.34	.....	30,805.34
	2,829,127.60	245,553.02	3,074,680.62
Less Depreciation Cancer Clinic Equipment	4,200.00	4,200.00	8,400.00
" Hospital Equipment	795,600.00	124,200.00	919,800.00
	799,800.00	128,400.00	928,200.00
TOTALS—EXHIBIT A	2,029,327.60	117,153.02	2,146,480.62

Note—Equipment acquired prior to August 31, 1938, is stated at cost less accumulated depreciation to that date. Acquisitions subsequent to August 31, 1938, are stated at cost, with the exception of hospital and cancer clinic equipment which is stated at cost less accumulated depreciation.

RESTRICTED CURRENT FUNDS—ORGANIZED RESEARCH

For the Year Ended August 31, 1956

Funds	Balance August 31, 1955	Receipts	Disbursements			Balance August 31, 1956
			Salaries	Other Expense	Total	
School of Medicine	7,495 51	17,000 00	10,150 92	3,605 44	13,756 36	10,739 15
Abbott, Lilly, and Upjohn		67 50	67 50		67 50	
American Cancer Society—VI-19	679 64	7,260 83	6,354 66	1,585 81	7,940 47	
" CH-30A		1,619 57	1,366 66	252 91	1,619 57	
" CH-30B	9 39			9 50	9 50	9 39
" F-127-A	24,770 45	23,855 78	15,976 46	1,930 73	17,907 19	30,719 04
Arthritis	2,000 00			956 33	956 33	1,043 67
Boston	911 31	25 00				936 31
Cancer Control	304 44	25 00				329 44
Cardiology—1	3,040 00	200 00	300 00	6 00	306 00	2,934 00
" 2	1,255 98					1,255 98
Ciba Pharmaceutical Products—1	441 10			210 68	210 68	230 42
" 2	1,389 10		1,294 38	25 90	1,320 28	68 82
" 3		2,950 00	143 61	503 39	647 00	2,303 00
" 4	32 56			32 56	32 56	
Damon Runyon Memorial—DRIR-42-C	4,669 97	(-1,852 68)	1,796 01	1,041 28	2,837 29	
" DRG-42-E		7,682 68	1,881 50	1,084 15	2,965 65	4,667 03
" DRG-42-F	9,000 00			7,978 35	7,978 35	1,021 65
" DRG-338	500 00			262 79	262 79	237 21
Davis and Geck	813 44		120 00	693 44	813 44	
Eaton-Yost Drug Co.	965 15					965 15
Freeman-Kemp Memorial	521.00	85.00				606 00
Hodgkin's Disease	3,872.32	6,675.00	3,325.34	2,733 44	6,058 78	4,488 54
Interagency Institute for the Study of Analgesic and Sedative Drugs	1,080 00					1,080 00
Johnson, Leslie W., Memorial		240.00	50.00	190 00	240 00	
Keystone Chemergic Corp.	9,261.19	8,960.00	9,766.23	2,380.49	12,146.72	6,074.47
Lasdon Foundation—1	189.89		178.77		178.77	11.12
" 2	746.77					746.77
Lederle Laboratories	7,452.00	8,250.00	1,465.50	1,108.69	2,574.19	13,127.81
Life Insurance						

[illegible]	2,019 57		982 00	121 62	1,102 62	916 95
Massachusetts Eye and Ear Infirmary—1	720 07	5,635 00	2,508 31	1,288 66	3,796 97	1,838 03
" 2	1,916 98		392 00	855 49	1,247 49	720 07
Mayo Foundation	787 07			374 50	374 50	699 49
Mayo Asso. Laboratories	784 16	6,120 00	1,001 00	2,739 45	3,740 45	362 57
Meriter Health Clinic	1,316 02	115 50		12 23	12 23	3,165 71
Michigan Sclerosis Society—2	32 76	2,951 23	2,380 26	608 73	2,988 99	1,419 29
" 3		6,948 77	2,034 96	916 23	2,951 19	3,997 58
National Academy of Sciences		1,092 00	400 00	89 80	489 80	602 20
National Drug Co	1,604 30	2,500 00	3,467 50	612 35	4,079 85	24 45
National Foundation for Infantile Paralysis—CPEP 99	23,318 23	23,687 56	19,853 24	4,937 24	24,790 48	22,210 30
" CVRE–97 1955	19,771 53		6,498 33	6,748 47	13,246 80	6,524 73
Neurology		198 50				198 50
Obstetrics and Gynecology	1,295 10	2,355 00		2,450 52	2,450 52	1,199 58
Ophthalmology	1,438 36					1,438 36
Parke Davis Co—1	1,808 24		965 60	19 32	984 92	823 32
" 2		5,000 00	596 30	666 93	1,263 23	3,736 77
Pulmonary Physiology		200 00	196 00	4 00	200 00	
Searle, G. D., Co—1	2,300 00			792 95	792 95	1,507 05
" 2		3,000 00	840 00	686 64	1,526 64	1,473 36
Schedle		2,826 02	15 00	394 00	409 00	2,417 02
Smith, Kline, and French Laboratories—2	908 00					908 00
Society for Investigation of Human Ecology		6,250 00	1,066 66	3,282 33	4,348 99	1,901 01
Surgery Department	449 80			92 95	92 95	356 91
United Airlines, Inc.—G. D. Searle and Co	629 96			551 35	551 35	78 61
Upjohn Co		300 00	130 00	158 60	288 60	11 40
United States Air Force—AF 18 (600)-463		5,870 02	3,325 00	2,545 02	5,870 02	
" AF 18 (600)-853		9,090 62	5,960 00	3,530 62	9,090 62	
United States Army—DA 49 007 MD 724		2,588 31	516 66	2,071 65	2,588 31	
United States Atomic Energy Commission—AT-30-1-1107	3,505 63	13,224 00	8,782 04	4,696 19	13,478 23	3,251 40
" AT-30-1-1820	3,450 00	11,500 00	5,173 00	6,122 31	11,295 31	3,654 69
United States Navy—Nonr 291 00		375 90		375 90	375 90	
" Nonr 761 02		9,965 99	5,141 00	4,824 99	9,965 99	
" Nonr 1321 00		4,077 92	2,000 00	1,774 89	3,774 89	303 03
" Nonr 1848 00		5,972 90	2,361 70	3,611 20	5,972 90	
" N7onr-41905		4,916 88	2,180 90	2,735 98	4,916 88	

RESTRICTED CURRENT FUNDS—ORGANIZED RESEARCH (Continued)

For the Year Ended August 31, 1956

Funds	Balance August 31, 1955	Receipts	Disbursements			Balance August 31, 1956
			Salaries	Other Expense	Total	
School of Medicine (Continued)						
United States Public Health Service—A-66-C2	155.28	(−41.22)		114.06	114.06	
" FG-139		2,592.00		192.00	192.00	2,400.00
" G-200-C2	550.00			37.86	37.86	512.14
" C-308-C8	1,598.99	5,261.41	5,216.00	1,644.40	6,860.40	
" C-308-C9		5,847.59	1,577.98	245.68	1,823.66	4,023.93
" E-314-C3	4,288.49	(−378.93)	2,250.00	1,659.56	3,909.56	
" E-314-C4		7,368.93	562.50	439.28	1,001.78	6,367.15
" A-408-C	158.01	(−60.35)		97.66	97.66	
" A-408-C2		7,615.00	3,521.00	2,000.26	5,521.26	2,093.74
" B-629	334.68	(−29.29)		305.39	305.39	
" B-629-C		5,712.00	4,174.00	1,280.00	5,454.00	258.00
" E-697-C	1,245.70	(−30.74)	750.00	464.96	1,214.96	
" B-798-R	11,827.20	(−61.30)	9,732.64	2,033.26	11,765.90	
" B-798-C		14,436.30	3,066.30	1,298.86	4,365.16	10,071.14
" A-839	4,280.28	(−231.78)	1,850.00	2,198.50	4,048.50	
" A-839-C		6,388.00	800.00	120.00	920.00	5,468.00
" A-852	5,134.86	(−147.70)	4,215.00	772.16	4,987.16	
" A-852-C		4,172.70	1,680.00	252.00	1,932.00	2,240.70
" M-965	8,061.42	(−78.01)	4,770.13	3,213.28	7,983.41	
" M-965-C		15,299.00	5,922.62	1,616.07	7,538.69	7,760.31
" B-1070		8,979.00				8,979.00
" B-1169		7,990.00				7,990.00
" H-1170-C3	947.52	3,882.13	4,425.00	404.65	4,829.65	
" H-1170-C4		4,579.98	1,350.00	235.38	1,585.38	2,994.60
" A-1348		2,300.00				2,300.00
" H-1449-C2	1,014.42		900.00	108.27	1,008.27	6.15
" H-1739	143.57	(−16.04)		127.53	127.53	
" H-1739-C		5,324.00	3,996.50	1,131.89	5,128.39	195.61
" H-1897	925.53	(−79.83)		845.70	845.70	
" H-1897-C		3,450.00		2,012.12	2,012.12	1,437.88

	H-1920	1,516 55	(−138 69)		1,377 86	1,377 86	
"	H-1920-C		3,450 00		1,806 50	1,806 50	1,643 50
"	H-2034	4,739 19	(−77 20)	1,625 00	3,036 99	4,661 99	
"	H-2034-C		6,175 00	1,275 00	191 25	1,466 25	4,708 75
"	H-2120		10,139 00	6,963 81	2,423 26	9,387 07	751 93
"	H-2274		16,416 00	7,863 21	6,861 65	14,724 86	1,691 14
"	C-2326		(−25 20)		(−25 20)	(−25 20)	
"	C-2326-C	18,959 97	20,601 26	22,036 01	17,525 22	39,561 23	
"	C-2326-C2		60,434 75	6,746 66	2,349 38	9,096 04	51,338 71
"	H-2335		11,455 00	300 00	907 50	1,207 50	10,247 50
"	C-2505-R		4,255 00				4,255 00
"	C-2684	5,290 00			1,945 30	1,945 30	3,344 70
"	C-2770		6,440 00		4,221 38	4,221 38	2,218 62
"	HT-5015-C2	1,123 78	(−586 87)	41 25	495 66	536 91	
"	HT-5015-C3		25,000 00	14,820 12	9,142 21	23,962 33	1,037 67
"	HF-5401		500 00				500 00
"	HF-5671		500 00		80 00	80 00	420 00
"	2M-5907-C4	4,587 73	6,679 98	11,063 40	204 31	11,267 71	
"	2M-5907-C5		13,187 97	3,708 32	1,852 00	5,560 32	7,627 65
United States Vocational Rehabilitation	19	50 62			50 62	50 62	
"	SAV-29-55		3,973 02	3,499 98	473 04	3,973 02	
"	25-56		6,613 88	3,652 50	342 84	3,985 34	2,628 54
"	84-56		4,219 00		4,219 00	4,219 00	
"	141-56-57		8,250 00	3,499 98	833 66	4,333 64	3,916 36
Vick Chemical Co			960 00	177 50	608 27	785 77	174 23
Wander Foundation		640 00	1,668 00	496 00	1,773 54	2,269 54	38 46
Washington Heart Association	2	20 73					20 73
"	3	1,835 10	600 00	493 75	967 35	1,461 10	974 00
"	4	446 31	2,550 00	2,759 98	54 20	2,814 18	182 13
"	5	317 00	1,350 00	390 00		390 00	1,277 00
"	6		2,807 00	1,200 00	1,156 54	2,356 54	450 46
"	7		3,888 00		507 00	507 00	3,381 00
"	8		1,250 00				1,250 00
Whitehall Pharmacal Co		64 51	600 00	120 00	372 50	492 50	172 01
Wyeth Laboratories		200 00			38 06	38 06	161 94
		229,856 49	552,953 54	286,096 14	177,912 55	464,008 69	318,801 34

RESTRICTED CURRENT FUNDS—ORGANIZED RESEARCH (Continued)

For the Year Ended August 31, 1956

Funds	Balance August 31, 1955	Receipts	Disbursements			Balance August 31, 1956
			Salaries	Other Expense	Total	
ARTS AND SCIENCES						
National Science Foundation—NSF-G921	554.22	(−84.56)	32.66	437.00	469.66	
Research Corporation—1	925.60			207.97	207.97	717.63	
" 3	538.23			52.25	52.25	485.98	
" 4		2,800.00				2,800.00
Richardson Foundation	19,333.21	(−759.97)	7,141.60	11,431.64	18,573.24	
United States Air Force—AF-18-600-1180		54,334.04	36,331.47	18,002.57	54,334.04	
United States Army—DA-49-[illegible]-1		1,123,283.78	775,401.89	347,881.89	1,123,283.78	
" DA-18-064-404-CML-8		163,853.36	110,748.49	53,104.87	163,853.36	
" DA-18-064-404-CML-163		46,857.24	35,837.70	10,519.54	46,357.24	
" DA-44-109-QM-650		701,033.86	430,496.19	270,537.67	701,033.86	
" DA-49-083-OSA-1012		603.17	603.17		603.17	
" DA-44-109-QM-1087		170,402.13	101,565.99	68,836.14	170,402.13	
" DA-18-108-CML-5000		20,221.56	7,881.48	12,340.08	20,221.56	
" DA-18-108-CML-5395		96,224.90	54,183.42	42,041.48	96,224.90	
" DA-18-108-CML-5949		11,717.73	7,960.45	3,757.28	11,717.73	
United States Atomic Energy Commission—AT-30-1-821	1,933.60		1,200.00	203.60	1,403.60	530.00
United States Navy—N[illegible]-128-60		1,156.76	790.95	365.81	1,156.76	
" N[illegible]-267		2,025.65	1,056.70	968.95	2,025.65	
" N[illegible]-713-03		29,386.42	13,242.44	16,143.98	29,386.42	
" N[illegible]-6211s-5176		211.06	100.00	111.06	211.06	
" N[illegible]-6211s-5472		13,000.35	8,568.80	4,431.55	13,000.35	
" NOrd-9951		12,207.75	3,790.55	8,417.20	12,207.75	
" NOrd-10441		16,741.03	11,000.00	5,741.03	16,741.03	
" N7onr-41904		294,928.17	198,959.43	96,068.74	294,928.17	
" N7onr-41908		28,119.36	18,969.48	9,149.88	28,119.36	
" NObsr-57437		15,642.42	4,405.71	11,236.71	15,642.42	
United States Vocational Rehabilitation—10-56		17,162.00	7,085.13	8,299.88	15,385.01	1,776.99
" 10-57		11,476.00				11,476.00
" 71	781.14	(−83.35)	582.33	115.46	697.79	
	24,066.00	2,832,000.86	1,837,936.03	1,000,344.23	2,838,280.26	17,786.60

[illegible]						
American Cancer Society—INSTR 24-G	5,010 89	(—3,084 46)	282 69	1,644 74	1,927 43	
" INSTR 24-H		37,450 00	17,096 03	10,364 52	27,970 55	9,479 45
" D C Division 11	612 78		279 08	333 70	612 78	
" D C Division 12		15,074 00	13,684 00	1,390 00	15,074 00	
National Research Council	1,200 00			95 00	95 00	1,105 00
Stewart—1	20,983 16	25,169 98	15,901 82	6,193 32	22,095 14	24,058 00
" 2	169 98	(—169 98)				
U S Atomic Energy Commission—AT-30-1-1850		7,443 00	164 25	2,271 33	2,435 58	5,007 42
United States Navy—Nonr-761-01		418 45	288 97	129 48	418 45	
United States Public Health Service—H-142-C5	970 33	(—469 73)	280 77	213 83	500 60	
" H-142-C6		18,532 00	11,108 84	4,548 39	15,657 23	2,874 77
" CT-517-C7	8,069 71	(—95 82)	6,870 69	1,105 20	7,975 89	
" CT-517-C8		25,000 00	14,686 44	2,075 71	16,762 15	8,237 85
" C-2016-C	2,777 97	6,005 70	7,427 00	1,356 67	8,783 67	
" C-2016-C2		6,003 25	2,495 00	526 15	3,021 15	2,982 10
United States Veterans Administration—V1001M-4047		62 86		62 86	62 86	
	39,794 82	137,340 25	91,081 58	32,308 90	123,390 48	53,744 59
ENGINEERING						
American Society of Mechanical Engineers		3,725 00	2,627 66	562 18	3,189 84	535 16
United States Army—DA-22-079-eng-141		62,776 27	34,451 48	28,324 79	62,776 27	
" DA-22-079-eng-194		11,224 91	7,704 45	3,520 46	11,224 91	
" DA-44-009-eng-3053		2,373 28		2,373 28	2,373 28	
United States Navy—Nonr-761-04		3,362 30	2,817 28	1,045 02	3,362 30	
		83,461 76	47,100 87	35,825 73	82,926 60	535 16
PHARMACY						
Proprietary Association	376 20			19 31	19 31	356 89
TOTALS—EXHIBIT C	294,093 51	3,605,756 41	2,262,214 62	1,246,410 72	3,508,625 34	391,224 58

RESTRICTED CURRENT FUNDS—INVESTMENT INCOME

For the Year Ended August 31, 1956

Funds	Balance August 31, 1955	Net Income	Disbursements		Balance August 31, 1956
			Current Operations	Added to Principal	
ENDOWMENT FUNDS (Schedule 12)					
UNRESTRICTED					
Acker		16.00	16.00		
Alumni		39.00	39.00		
Bragg		13.00	13.00		
Campaign		9,908.00	9,908.00		
Coupe		1,546.14	1,546.14		
Cotterman		11,750.19	11,746.19	4.00	
Davis		2,219.00	2,219.00		
Delac		30.00	30.00		
Dyer		107.00	107.00		
Goddard		1,794.00	1,794.00		
Happett		53.00	53.00		
King		1,026.00	1,022.00	4.00	
Poole		53.00	53.00		
Reynolderfer		800.00	800.00		
River Raisin		53.00	53.00		
Sanders		113.00	113.00		
Sutherin		267.00	267.00		
Subscription Gifts		669.00	665.00	4.00	
Syms		85.00	85.00		
Teller		7,312.00	7,310.00	2.00	
Trustees		84.00	84.00		
Walsh		5.00	5.00		
Weddell		534.00	534.00		
Willard Association		53.00	53.00		
Withers		1,435.00	1,435.00		
Woodhull		2,669.00	2,669.00		
SCHEDULE 1			42,674.33		

Agriculture					
Physiology	Kerr	15,381 00	4,021 00	2,100 00	17,302 00
"	Miller	1,184 00	2,952 00	1,350 00	2,765 00
"	Sanford	73 43	10,779 70	10,851 13	
Pomology—Mason			44 00	44 00	
"	Council		27 00		
"	Conservatory	404 00			451 00
"	Dean		8,472 41	8,472 41	
"	Dean		9,100 00	9,100 00	
"	Fees (2 Funds)		774 00	773 00	1 00
"	Office		10,300 07	7,000 00	3,300 07
Law School—Aurner		5,092 00	267 00		5,359 00
School of Engineering—Hilgard			53 00	53 00	
" " "	School of Engineering	615 21	192 79	100 00	708 00
School of Commerce—Ransom			33 00	30 59	2 41
" " "	Scientific Res		14,929 03	14,929 03	
School of Medicine—Berkeley Division			57,118 48	57,118 48	
" " "	Physics		195 00	195 00	
" " "	Chemistry		198 00	198 00	3 00
" " "	Campus	1,140 51	151 74	583 00	2 00
" " "	Commerce	9,212 73	533 27		745 46
" " "	Dentistry		534 00	534 00	9,756 00
" " "	Gardner		63 00	63 00	
" " "	Lewis		246 00	237 00	3 00
" " "	Mayo		1,805 56	1,804 56	1 00
" " "	Jessup		6,771 00	6,071 00	
" " "	School of Medicine		3,009 00	3,005 00	3 00
" " "	School of Medicine Class of 1911		657 00	657 00	
" " "	Shorb		4 00	4 00	
School of Pharmacy—Gaylord			373 21	373 21	
Physics Graduate			534 00	534 00	
"	National University Library		797 00	797 00	
"	Scudder National University Library		981 00	976 41	4 59
			81 00	81 00	
				128,180 69	

RESTRICTED CURRENT FUNDS—INVESTMENT INCOME (Continued)

For the Year Ended August 31, 1956

Funds	Balance August 31, 1955	Net Income	Disbursements		Balance August 31, 1956
			Current Operations	Added to Principal	
ENDOWMENT FUNDS (Continued)					
Restricted (Continued)					
Cancer Clinic—Cancer Clinic		1.00	1.00		
" " Sanders		1,712.57	1,712.57		
Schedule 1			1,713.57		
Hospital—Burton		333.00	333.00		
" Chapman		66.00	62.00	4.00	
" Clephane		53.00	53.00		
" General		77.00	77.00		
" Hirsch		1,997.00	1,997.00		
" Houser		134.00	134.00		
" Kauffman		53.00	53.00		
" Kimmel		164.00	164.00		
" Kuhlbank		83.41		83.41	
" Maloney		180.00	180.00		
" National Park Seminary		27.00	27.00		
" Reinhardt		27.00	27.00		
" Strong		801.00	801.00		
" Tree		534.00	534.00		
" Woodbury		534.00	534.00		
Schedule 1			4,976.00		

Scholarships—Academic:					
Barnard	448 29	250 04	250 00		448.29
Transferred to Bartsch Dunne Fund	680 00	1,060 58	680 00		
Bradley				389 58	680 00
Case	117 00	147 00			264 00
Carter, H H	5,496 90	2,594 10	3,100 00	1 00	4,990 00
Carter, M M	2,091 00	267 00	400 00		1,958 00
Columbian Women Funds	228 00	53 00	100 00		181 00
Bowen	60 00	64 00	60 00		64 00
Chamberlin	115 00	123 00	115 00		123 00
College Women's	25 00	27 00	25 00		27 00
Founders of Columbian Women	249 00	267 00	249 00		267 00
Henson	249 00	267 00	249 00		267 00
Knapp	249 00	267 00	249 00		267 00
McWilliam	50 00	53 00	50 00		53 00
Wilson	50 00	53 00	50 00		53 00
Davis	143 00	53 00	80 00		116 00
D C—D A R	454 00	439 00	350 00		543 00
Dorsey	1,381 00	688 00	432 00	50 00	1,587 00
Ewan	125 00	267 00			392 00
Farnham	211 00	53 00			264 00
Fisher		51 07		(—11 07)	62 14
Hampel	96 00	27 00	40 00		83 00
Harvey	216 74	195 27	150 00	12 23	249 78
Hazelton	590 00	267 00	300 00		557 00
Kendall	297 00	318 00	272 00		343 00
Morehouse	307 00	80 00	200 00		187 00
Pearson	473 00	152 00	200 00		425 00
Powell	23,736 00	2,668 00			6,404 00
Shepard	1,096 00	534 00	450 00		1,180 00
Spencer	310 46	153 20	150 00		333.66
Stone	758 00	107 00	200.00		665 00
Swisher	600 00	732.00		732.00	600.00
Walker	800 00	134 00	300 00		634.00
Withington	284 00	104 00	150 00		238 00
Woodhull	82.00	32.00	50.00		64.00
Scholarships Awarded			8,901 00		

RESTRICTED CURRENT FUNDS—INVESTMENT INCOME (Continued)

For the Year Ended August 31, 1956

Funds	Balance August 31, 1955	Net Income	Disbursements		Balance August 31, 1956
			Current Operations	Added to Principal	
ENDOWMENT FUNDS (Continued)					
Restricted (Continued)					
Prize— Burns	124 00	53 00	75 00		102 00
• Cubley	182 00	160 00	150 00		192 00
• Cumnock	73 00	53 00	50 00		76 00
• Carter	98 00	53 00	60 00		91 00
• Davis	152 00	38 00	60 00		130 00
• Emery	432 00	160 00	150 00		442 00
• Evans	40 00	80 00	70 00		50 00
• Fiske	171 00	53 00			224 00
• Fund	459 00	295 00	300 00	1 00	453 00
• Goddard	92 00	53 00	60 00		85 00
• Herbert	164 00	43 00	20 00		187 00
• Lyman	8 00	5 00	2 00		11 00
• Mabie	530 00	267 00	450 00		347 00
• Quincy	79 00	27 00	35 00		71 00
• Rankin	184 00	27 00	30 00		181 00
• Spaulding-Hixon	35 00	15 55	26 55		24 00
• Spooner	435 00	53 00	100 00		388 00
• Sumner	505 00	53 00	150 00		409 00
• Wade	804 00	267 00	350 00		721 00
• Weddell					
Prizes Awarded			2,138 55		

Hospital Equipment—Women's Board	1,005 00	1,199 00			2,204 00
Library Books—Gladstone	34 82	9 18			44 00
" " Hessen	16 01	10 99			27 00
" " Howard	2,823 50	533 21	89 71		3,267 00
" " Meyer	187 75	58 25			411 00
" " Nunes	2,261 30	533 70			2,795 00
" " Swisher	1,119 96	112 80	23 76		1,209 00
EXHIBIT G			113 47		
ENDOWMENT NET INCOME		201,666 48			
PLANT FUNDS (Schedule 11)					
Field House		8 09		8 09	
Law Center	(—123 76)	1,090 67		966 91	
Patio Income used for athletics		11,556 84	11,556 84		
School of Engineering Building		9,341 08		9,341 08	
School of Medicine Building		43 11		43 11	
Women's Activities Building		122 45		122 45	
SCHEDULE I			11,556 84		
RESTRICTED CURRENT FUNDS (Schedule 10B)					
Commonwealth		136.52		136.52	
Patent, Trademark and Copyright Foundation		665 73		665 73	
TOTALS—EXHIBIT C	87,247 61	224,631 17	200,254.42	15,880 49	95,743.87

RESTRICTED CURRENT FUNDS—MISCELLANEOUS

For the Year Ended August 31, 1956

Funds	Balance August 31, 1955	Additions		Deductions		Balance August 31, 1956
		Gifts	Other			
Scholarship, Fellowship						
Air Force Aid Society		350 00				350 00
Alpha Zeta Omega Pharmaceutical Fraternity		1,000 00		Scholarships	480 50	519 50
American Foreign Service Association	31 00					31 00
American Foundation Pharmaceutical Education						
Scholarship		400 00		Scholarships	400 00	
Fellowship		1,800 00				1,800 00
American Legion		350 00		Scholarships	350 00	
American Society of Women Accountants	100 00	100 00		"	100 00	100 00
Anonymous		96 00		"	96 00	
Chi Omega Alumnae Association	200 00	200 00		"	200 00	200 00
Chassey Foundation	320 00					320 00
Colombian Women	29 60	663 40		"	683 00	10 00
Comins, Joseph, Foundation		300 00		"	300 00	
D. C. Pharmaceutical Association	500 00	500 00		"	500 00	500 00
Firestone Tire and Rubber Co		1,224 06		"	1,224 06	
General Motors Corp		1,650 00		"	1,650 00	
Grossman, Joseph B		100 00				100 00
Kappa Alpha Theta Sorority		500 00		"	500 00	
Kappa Psi Fraternity	150 00	75 00		"	150 00	75 00
Kemper Foundation		750 00		"	388 50	361 50
Lederle Laboratories	1,200 00	1,200 00		"	1,600 00	800 00
Meyer Foundation	2,500 00	2,500 00		"	2,500 00	2,500 00
National Secretaries Association		250 00		"	250 00	
Noyes Foundation		250.00				250.00

Panhellenic Association	777 52		Scholarships	200 00	577 52
Phi Delta Gamma Sorority		100 00			100 00
President's	1,000 00				1,000 00
Quill and Scroll		250 00			
Tobacco Industry Research Committee	500 00	500 00		250 00	
Washington and Lee High School		100 00		500 00	500 00
Zonta Club	300 00				100 00
				300.00	
Prize					
Alpha Delta Pi Sorority		10 00	Prize	10 00	
Alpha Zeta Omega Pharmaceutical Auxiliary	32 50	25 00		22 50	35.00
Cannon, Martin L.	20 60	25 00		22 50	23.10
Chi Omega Sorority		25 00		25 00	
Delta Zeta Sorority		10 00		10 00	
Ellsworth		25 00		25 00	
Kappa Kappa Gamma Sorority		10 00		10 00	
Kappa Psi Fraternity		75 00			75.00
Nevaser, Julius		100 00		100 00	
Phi Delta Delta Fraternity	25 00	25 00		25 00	25.00
Pi Beta Phi Sorority		20 00		20 00	
Psi Chi Sorority		50 00		50 00	
Sigma Kappa Sorority		10 00		10 00	
Student Art Show		100 00		100.00	

RESTRICTED CURRENT FUNDS—MISCELLANEOUS (Continued)

For the Year Ended August 31, 1956

Funds	Balance August 31, 1955	Additions		Deductions		Balance August 31, 1956
		Gifts	Other			
Columbian College						
Ryerson—Mellon Foundation	2,500 00	10,000 00		To Schedule 1	10,000 00	2,500 00
Law School						
Miller, Herman		1,000 00				1,000 00
Patent, Trademark, Copyright Foundation	80,883 99	32,334 75		To Schedule 1	35,577 87	87,306 60
Investment Income			665 73			
School of Medicine						
Arthritis and Rheumatism Foundation	2,040 00	2,040 00		To Hospital	4,080 00	
Commonwealth		500,000 00				500,000 00
Investment Income			176 52			176 52
Dermatology and Syphilology	4,602 78	588 25				5,191 03
Pfizer—Physiology	17,011 80	16,662 50		To Schedule 1	11,960 56	21,713 74
Freeman and Watts, Drs.—Neurology	526 68			To Schedule 1	526 68	
* * * * Technical	437 50			To Schedule 1	437 50	
Neurology, Education, Research	153 79			To Schedule 1	124 50	29 29
Obstetrics and Gynecology—Film	332 00	161 79				494 75
Pediatrics Department	4,000 00			To Schedule 1	3,324 82	675 18
Robb, Carroll T.	65 00			To Schedule 12	65 00	
Surgery, Education, Research	3,306 07	3,044 20		To Schedule 1	2,412 36	3,934 91
Trauma	654 00			To Schedule 1	396 57	257 43

School of Pharmacy						
D. C. Pharmaceutical Association—Equipment	2,761 57			To Schedule 1.	640 93	2,120 64
" " " " Literature	14 80					14 80
D. C. Women's Pharmaceutical Auxiliary—Equipment	24 45	25 00		To Schedule 1.	13 00	36 45
Special Gifts—Equipment	25 00			To Schedule 1.	25 00	
Miscellaneous						
Educational Television	100 00			To Schedule 13.	100 00	
General Alumni Association		19,607 39		To Schedule 1.	8,957 00	
" " "				To Schedule 12.	3 00	
" " "				To Schedule 13.	10,483 39	
Hospital House Staff	2,032 18		1,608 24			164 00
Hospital House Staff—Pathology			25 00			3,640 42
Key Deposits	484 25					25 00
Reading Clinic—Phi Lambda Theta Sorority	100 00			Refunds	52 00	432 75
Speech Clinic Foundation	510 16	500 00		Expense	100 00	
				"	945 92	64 24
TOTALS—EXHIBIT C	139,250 67	601,682 34	2,435 49		103,278 16	640,090 34

RESTRICTED CURRENT FUNDS—AGENCY

For the Year Ended August 31, 1956

Funds	Balance August 31, 1955	Deposits	Withdrawals	Balance August 31, 1956
Davis-Hodgkins House				
Transferred from Schedule 13		119.21	105.07	14.14
Flowers	86.85			86.85
National University Docket	100.00			100.00
R.O.T.C.	77.85	330.15	215.39	192.61
Women's Board of the Hospital				
Women's Board Courier	518.76	6,834.89	6,793.42	560.23
Women's Board Gift Shop	9,548.08	31,562.35	27,971.86	13,138.57
Women's Board Memorial Fund	175.00	25.00		200.00
Totals—Exhibit C	10,506.54	38,871.60	35,085.74	14,292.40

CHANGES IN PRINCIPAL OF LOAN FUNDS

For the Year Ended August 31, 1956

FUNDS	Balance August 31, 1955	Additions		Refunded to U. S. Government	Balance August 31, 1956
		Gifts	Interest on Loans		
Home Economics	382.35				382.35
Kellogg	19,225.64		533.44		19,759.08
Law Association	853.15	1,000.00	14.28		1,867.43
Pfizer	1,001.33		25.00		1,026.33
Schoenfeld	1,900.47	55.00	5.30		1,960.77
School of Medicine	2,225.42	3,840.95			6,066.37
Sutherland	1,381.00		72.10		1,453.10
University	8,646.69		166.07		8,812.76
War	4,995.37			176.34	4,819.03
TOTALS — EXHIBIT D	40,611.42	4,895.95	816.19	176.34	46,147.22

CHANGES IN PRINCIPAL OF ENDOWMENT FUNDS

For the Year Ended August 31, 1956

Funds	Balance August 31, 1955	Additions			Deductions	Balance August 31, 1956
		Gifts	Investment Income	Other		
UNRESTRICTED						
Acuff	300.00					300.00
Alford	732.00					732.00
Bond	250.00					250.00
Campaign	186,750.00					186,750.00
Camp		21,409.17				21,409.17
Coleman	220,156.00		4.00			220,160.00
Davis	41,571.00					41,571.00
Davis		1,000.00				1,000.00
Dyer	2,000.00					2,000.00
Gabbard	33,492.00					33,492.00
Hooper	1,000.00					1,000.00
Kline	19,216.00		4.00			19,220.00
Polk	1,000.00					1,000.00
Rockefeller	15,000.00					15,000.00
River Basin	1,000.00					1,000.00
Sanders	2,110.00					2,110.00
Sellers	5,000.00					5,000.00
Subscription Gifts	12,526.00		4.00			12,530.00
Sykes	1,500.00					1,500.00
Tyler	136,978.00		2.00			136,980.00
Trustees	1,565.00					1,565.00
Wands	100.00					100.00
Weddell	10,000.00					10,000.00
Wilson Association	1,000.00					1,000.00
Womens	26,892.00					26,892.00
Woodruff	50,000.00					50,000.00

RESTRICTED

Endowment					
King	75,322 00				75,322 00
Mayo	55,303 00				55,303 00
Sanders	211,921 02				
Net loss on sale of investments				63 28	210,957 74
Professorship					
Mason	830 00				830 00
Carroll	500 00				500 00
Observational	158,710 00				158,710 00
Dyer's	170,592 00				170,592 00
Ives	14,510 00		1 00		14,510 00
Ford Foundation		385,000 00			385,000 00
Fry	37,509 93		3,300 07		40,810 00
Fry (consolidated by National Savings and Trust Co.)	106,968 48				
Net loss on sale of investments				50	106,967 98
Yale	5,000 00				5,000 00
Library					
Gladstone	175 00				175 00
Henry	200 00				200 00
Howard	10,000 00				10,000 00
Mercy	1,000 00				1,000 00
Nurse	10,000 00				10,000 00
Swisher	2,121 00				2,121 00

CHANGES IN PRINCIPAL OF ENDOWMENT FUNDS (Continued)

For the Year Ended August 31, 1956

Funds	Balance August 31, 1955	Additions			Deductions	Balance August 31, 1956
		Gifts	Investment Income	Other		
RESTRICTED (Continued)						
Law School—Altizer	1,000.00					1,000.00
School of Engineering—Howard	3,620.00					3,620.00
" " " School of Engineering	500.00	297.39	2.61			800.00
School of Government—Rankin	279,705.00					279,705.00
" " " Scottish Rite	1,000,000.00					1,000,000.00
School of Medicine						
Bartsch Dunne	3,647.42		389.58			4,037.00
Income of Bartsch Scholarship Fund	3,707.00		3.00			3,710.00
Borden	2,828.00		2.00			2,830.00
Collins	10,000.00					10,000.00
Cooper	10,000.00					10,000.00
Cummings	1,000.00					1,000.00
Eppley	4,487.00		3.00			4,490.00
Gardner	32,299.00		1.00			32,300.00
Lewis		280,872.95				280,872.95
Meyer	57,487.00		3.00			57,490.00
Ruffin	12,162.00	842.00				13,004.00
School of Medicine	79.00	3.00				82.00
School of Medicine Class of 1954	8,216.79					8,216.79
Sharpe						
School of Pharmacy—Gibbs	10,000.00					10,000.00

Hospital						
Boston	5,500.00	2,000.00				7,500.00
Chapman	1,226.00		4.00			1,230.00
Clephane	1,000.00					1,000.00
General	1,445.00					1,445.00
Hitch	37,431.00					37,431.00
Hoover	2,500.00					2,500.00
Kaufman	1,000.00					1,000.00
Kimmel	3,072.00					3,072.00
Kuhlhank	1,550.59		83.41			1,634.00
Mahoney	3,000.00	1,000.00				4,000.00
National Park Seminary	500.00					500.00
Reinhardt	500.00					500.00
Strong	15,000.00					15,000.00
Tree	10,000.00					10,000.00
Woodbury	10,000.00					10,000.00
Hospital Equipment						
Women's Board	22,463.40					22,463.40
Cancer Clinic						
Cancer Clinic	10.00	53.00				
Transferred from Schedule 10B				65.00		128.00
Sanders	29,151.03					29,151.03

CHANGES IN PRINCIPAL OF ENDOWMENT FUNDS (Continued)

For the Year Ended August 31, 1956

Funds	Balance August 31, 1955	Additions			Deductions	Balance August 31, 1956
		Gifts	Investment Income	Other		
RESTRICTED (Continued)						
Scholarship						
Andrews	5,194.95					5,194.95
Bastach	20,034.00					20,034.00
Bradley	2,760.00					2,760.00
Carr	48,609.00		1.00			48,610.00
Carter, H. H	5,000.00					5,000.00
Carter, M. M	1,000.00					1,000.00
Columbian Women Funds						
Benson	1,200.00					1,200.00
Chamberlin	2,500.00					2,500.00
College Women's	500.00					500.00
Founders of Columbian Women	5,000.00					5,000.00
Herron	5,000.00					5,000.00
Knapp	5,000.00					5,000.00
McWilliam	1,000.00					1,000.00
Wilson	1,000.00					1,000.00

Davis	1,000 00				1,000.00
D. C.—D. A. R.	8,225 00				8,225.00
Dorsey	12,864 00		50.00		12,914.00
Erwin	5,000 00				5,000.00
Farnham	1,000 00				1,000.00
Fisher	950 93	60.14	(—11.07)		1,000.00
Hampel	500 00				500 00
Harvey	4,688 40		12.23		4,650 63
Hazelton	5,000 00				5,000.00
Kendall	5,960 00				5,960.00
Morehouse	1,500 00				1,500 00
Pearson	2,840 00				2,840 00
Powell	50,000 00				50,000 00
Shepard	10,000 00				10,000 00
Spencer	7,422 20				7,422.20
Stone	2,000 00				2,000 00
Swisher	13,710 00		732 00		14,442.00
Walker	2,500 00				2,500.00
Withington	1,954.00				1,954.00
Woodhull	600.00				600.00

CHANGES IN PRINCIPAL OF ENDOWMENT FUNDS (Continued)

For the Year Ended August 31, 1956

Funds	Balance August 31, 1955	Additions			Deductions	Balance August 31, 1956
		Gifts	Investment Income	Other		
RESTRICTED (Continued)						
Prize						
Burns	1,000.00					1,000.00
Cowles	3,000.00					3,000.00
Croissant	1,000.00					1,000.00
Cutter	1,000.00					1,000.00
Davis	700.00					700.00
Ivory	3,000.00					3,000.00
Evans	1,500.00					1,500.00
Fitch	1,000.00					1,000.00
Goddard	5,519.00		1.00			5,520.00
Hubbard	1,000.00					1,000.00
Lamer	800.00					800.00
Mahler	100.00					100.00
Ordronaux	5,000.00					5,000.00
Ruggles	500.00					500.00
Staughton-Elton	500.00					500.00
Sterrett	300.00					300.00
Swasher	1,000.00					1,000.00
Walsh	1,000.00					1,000.00
Weddell	5,000.00					5,000.00

PLANT						
Graduate	14,916.00	10.00				14,926.00
National University Library	18,385.43		4.57			18,390.00
Schouler National University Library	1,520.00					1,520.00
	3,524,199.57	692,547.65	4,596.40	65.00	63.78	4,221,344.84
RESERVES FOR PROTECTION OF INVESTMENTS						
Consolidated Endowment Funds						
Net gain on sale of investments	96,979.93					
Scottish Rite Fund				2,610.06		99,589.99
Gain on sale of investments	58,458.64					
				1,529.18		59,987.82
TOTALS EXHIBIT F	3,679,638.14	692,547.65	4,596.40	4,204.24	63.78	4,380,922.65

CHANGES IN PRINCIPAL OF PLANT FUNDS

For the Year Ended August 31, 1956

Funds	Balance August 31, 1955	Additions			Deductions		Balance August 31, 1956
		Gifts	Investment Income	Other	Plant	Other	
Barker Welfare Foundation Building		1,000.00			1,000.00		
Cancer Clinic Equipment							
Beta Gamma Phi Sorority	2,525.71				2,088.40		437.31
Special	1,168.00	3,580.26			1,800.64		2,947.68
Zito	406.79						406.79
Davis-Hodgkins House Equipment	119.21					119.21	
Transferred to Schedule 10C							
Field House	427.91	344.00	8.09				780.00
Ford Foundation Hospital Building		113,250.00					113,250.00
Grant Memorial Equipment	500.00				500.00		
Hill Burton Hospital Equipment		7,886.45			7,886.45		
Hospital Equipment	472.00	160.00			208.37		423.63
Cardiovascular	44.00						44.00
Multiple Sclerosis		925.00		700.00	86.15		1,538.85
Obstetrics and Gynecology O. P. Department					654.71		202.52
Transferred from Current Funds Unrestricted	407.48	449.75					102.91
Physical Medicine	102.91						
Prenatal Nursery	76.30				76.30		
Surgery Department	621.72	3,000.00			1,793.53		1,828.19
Women's Board Gift Shop							
Law Center Building	65,006.90	51,229.67	966.91			19,500.37	97,703.11
Transferred to Schedule 1							

Library Books							
American Diplomatic History	46 00						46 00
Brooklyn Alumni Club	405 50						405 50
Chase, Ruth Judith	50 00						50 00
Class of 1945	58 75						58 75
Council of Religious Organizations	310 56						310 56
Davis, Harry C.	25 00				25 00		
Gentre, Carlotta		17 00			8 92		8 08
Hellenic Society	225 00						225 00
Herbst	100 00				100 00		
Merrill Lynch, Pierce, Fenner and Beane	478 59						478 59
Noyes, Theodore W	3,752 59				698 55		3,054 04
Phi Alpha Delta Fraternity		20 00					20 00
Phi Delta Epsilon Fraternity Graduate Club Ladies Auxiliary	101 50				101 50		
Price	8 35				8 35		
Rosen	58 23	250 00					308 23
School of Medicine Class of 1955	159 00				159 00		
Young, Isabella P.		30 00					30 00
Marion M. Bond and Mary A. Wood Memorial	2,000 00						2,000 00
Patro	386,895 60						386,895 60
School of Engineering Building	478,493 91	93,730 99	9,341 08		528,047 31		53,518 67
School of Engineering Equipment		5,171 33					
Transferred from Schedule 10B				100 00	5,271 33		
School of Medicine Building	2,126 13	2,091 56	43 31				4,261 00
Women's Activities Building	6,009 55	10 00	122 45				6,142 00
TOTALS— EXHIBIT F	953,183 25	283,146 01	10,481 84	800 00	550,514 51	19,619 58	677,477 01

GIFTS AND GRANTS

For the Year Ended August 31, 1956

CURRENT FUNDS

Unrestricted—Schedule 1			
American College Fund		182.68	
Colgate-Palmolive Co.		3,000.00	
Cook, Nevins F.		25.00	
Eastman Kodak Co.		1,000.00	
Equitable Life Assurance Society		2,000.00	
Ford Education Foundation		3,500.00	
General Alumni Association		8,083.00	
General Electric Education Fund		250.00	
General Motors Corporation		533.00	
National Radio Institute		500.00	
Radio Corporation of America		200.00	
Smith, Milton C.		25.00	
Time, Inc.		274.00	
United States Steel Foundation		2,000.00	21,572.68
Restricted—General—Schedule 1			
Ford Law Institute	1,000.00		
National Fund for Medical Education	31,984.02		
Washington Foreign Law Society Publications	822.10	33,806.12	
Restricted—Hospital—Schedule 1			
Cancer Clinic	3,053.38		
Other...	5,509.14	8,562.52	
Restricted—Organized Research—Schedule 10		3,605,756.41	

Restricted—Schedule 10B				
Scholarship, Fellowship—various donors		15,208 46		
Prize—various donors		510 00		
Columbian College—Religion—Milbank Foundation		10,000 00		
Law School—Property of Herman Maier		1,000 00		
" " Patent, Trademark and Copyright Foundation		32,334 75		
School of Medicine				
Arthritis and Rheumatism Foundation		2,040 00		
Commonwealth Fund		500,000 00		
Dermatology and Syphilology—Dr. H. Ford Anderson		588 25		
Physiology—Mrs. Robert B. Flint		16,662 50		
Obstetrical and Gynecology—Prize—Association of American Medical Colleges		161 79		
Surgery, Education, Research—various donors		3,044 20		
School of Pharmacy—D. C. Women's Pharmaceutical Auxiliary		25 00		
General Alumni Association—various donors	19,607 49			
Less transfers to special funds	19,443 39	164 00		
Miscellaneous—Speech Department—Speech Clinic Foundation		500 00	582,238 95	4,230,364 00
LOAN FUNDS (Schedule 11)				
Law Association Loan Fund—National University Alumni Association			1,000 00	
Schoenfeld Pharmacy Loan Fund—various donors			55 00	
School of Medicine Loan Fund—Charles A. Frueauff Foundation		2,000 00		
" Joseph H. King		800 00		
" Class of 1956		675 00		
" Dr. John D. Jolley		300 00		
" various donors		65 95	3,840 95	4,895 95

GIFTS AND GRANTS (Continued)

For the Year Ended August 31, 1956

ENDOWMENT FUNDS (Schedule 12)

Unrestricted			
Coupe Fund—Bequest of Jessie Coupe	21,409 17		
Dulac Fund—Bequest of Victor Dulac	1,000 00	22,409.17	
Restricted			
Professorship—Ford Foundation Professorship Fund—Ford Foundation		385,000 00	
School of Engineering Fund—Frank A. Howard		297 39	
School of Medicine—Meyer Fund—various donors	280,872 95		
" " " School of Medicine Fund—various donors	842 00		
" " " School of Medicine Class of 1954	3.00	281,717 95	
Hospital—Burton Fund—Grace C. Burton	2,000 00		
" Maloney Fund—Charles P. Maloney	1,000 00	3,000 00	
Cancer Clinic—Cancer Clinic Fund—Dr. John O. Nester	50.00		
" " " " " General Alumni Association	3.00	53.00	
Scholarship—Fisher Fund—Bequest of Esther Brigham Fisher		60.14	
Plant—Graduate Fund—Geneva D. Turner		10.00	692,547.65

PLANT FUNDS (Schedule 11)

Barker Welfare Foundation Building Fund—Barker Welfare Foundation		1,000 00	
Cancer Clinic Equipment Fund—Special		3,580 26	
Field House Fund—General Alumni Association		344 00	
Ford Foundation Hospital Building Fund—Ford Foundation		113,250 00	
Hill Burton Hospital Fund—United States Government		7,886.45	
Hospital Equipment Fund—Cardiovascular			
" " " Obstetrics and Gynecology—Out-Patient Department	160 00		
" " " Physical Medicine	925 00		
" " " Women's Board Gift Shop	449.75		
	3,000 00	4,534.75	
Law Center Building Fund—General Alumni Association			
" " " " various donors	2,971 50		
	48,258 17	51,229 67	
Library Book Fund—Carlotta George			
" " " Phi Alpha Delta Fraternity	17 00		
" " " Rosen	20 00		
" " " Isabella Young	250 00		
	30 00	317 00	
School of Engineering Building Fund—Charles H. Tompkins			
" " " " " Charles H. Tompkins Co.	71,630 99		
" " " " " H Street Building Corporation	11,700 00		
	10,400 00	93,730 99	
School of Engineering Equipment Fund—General Alumni Association			
" " " " " various donors . . .	5,066 33		
	105 00	5,171 33	
School of Medicine Building Fund—General Alumni Association		2,091.56	
Women's Activities Building Fund—General Alumni Association		10 00	283,146 01
TOTAL			5,232,526 29

DESCRIPTION OF LOAN FUNDS

August 31, 1956

HOME ECONOMICS LOAN FUND—Created in 1940 by the D. C. Home Economics Association to be loaned to senior girls majoring in home economics	382.35
KELLOGG LOAN FUND—Created in 1942 by the W. K. Kellogg Foundation to be loaned to students of the School of Medicine	19,759.08
LAW ASSOCIATION LOAN FUND—Created in 1941 by the George Washington Law Association to be loaned to students of the Law School	1,867.43
PFIZER LOAN FUND—Created in 1953 by Chas. Pfizer and Co., Inc., to be loaned to students of the School of Medicine	1,026.33
SCHOENFELD LOAN FUND—Created in 1953 by various donors as a memorial to Benjamin Schoenfeld, to be loaned to students in the School of Pharmacy	1,960.77
SCHOOL OF MEDICINE LOAN FUND—Created in 1952 by School of Medicine students to be loaned to students of the School of Medicine	6,066.37
SUTHERLAND LOAN FUND—Created in 1941 by Rose L. Sutherland and other donors, to be loaned to students of the School of Medicine	1,453.10
UNIVERSITY LOAN FUND—Created in 1928 by the University to make short time loans for educational purposes	8,812.76
WAR LOAN FUND—Created in 1942 by the United States Government to be loaned to students in technical and professional fields of national defense	4,819.03

DESCRIPTION OF ENDOWMENT FUNDS

August 31, 1956

UNRESTRICTED FUNDS

ACKER FUND—Bequest of George N. Acker, M.D., received in 1924, the income to be used as required	300.00
ALUMNI ENDOWMENT FUND—Created by the Class of 1920, to be added to by succeeding graduates, the income to be used as required	732.00
BRAGG FUND—Created in 1955 by James Elton Bragg, the income to be used as required	250.00
CAMPAIGN FUND—Created in 1923 by various donors, the income to be used as required	186,750.00
COOPE FUND—Bequest of Jessie Coope, A.B. in Education 1930, received in 1956, in memory of her brother, Lieutenant Colonel Harry Coope, the income to be used as required	21,409.17
CORCORAN FUND—Gifts of William W. Corcoran and other donors between the years 1871-86, the income to be used as required	220,160.00
DAVIS FUND—Bequest of Harry C. Davis, received in 1946, the income to be used as required	41,571.00
DULAC FUND—Bequest of Victor Dulac, received in 1955, the income to be used as required	1,000.00
DURST FUND—Created in 1953 by Dr. Sidney C. Durst in memory of his wife, Clara Saunders Durst, the income to be used as required	2,000.00
GODDARD ENDOWMENT FUND—Bequest of Frederick J. Goddard, received in 1949, the income to be used as required	33,602.00
HAGGETT FUND—Created in 1941 by Isabelle Barnes Haggett, the income to be used as required	1,000.00
KING, W. B., FUND—Created in 1941 by William B. King, the income to be used as required	19,220.00
POOLE FUND—Bequest of George Poole in 1951, the income to be used as required	1,000.00

DESCRIPTION OF ENDOWMENT FUNDS (Continued)

August 31, 1956

UNRESTRICTED FUNDS (Continued)

Reichelderfer Fund—Created by Mary M. Reichelderfer in 1945 in memory of her husband, Luther H. Reichelderfer, the income to be used as required	15,000.00
River Raisin Foundation Fund—Created in 1955 by the River Raisin Foundation, the income to be used as required	1,000.00
Sanders Endowment Fund—Created by J. Sanders in 1945, the income to be used as required	2,110.00
Sothern Fund—Bequest of Julia Marlowe Sothern, received in 1951, the income to be used as required	5,000.00
Subscription Gifts Fund—Created by various donors during the years 1845 51, the income to be used as required. (Formerly called the Poindexter Endowment Fund)	12,530.00
Syms Fund—Bequest of Samuel Syms in 1891, the income to be used as required	1,500.00
Teller Fund—Created in 1949 by bequest of John D. Teller and added to by Mary L. Teller, the income to be used as required	136,980.00
Trustees Fund—Created by the Board of Trustees of the University in 1932, the income to be used as required	1,565.00
Walsh Fund—Created in 1954 by John E. Walsh, the income to be used as required	100.00
Weddell Fund—Created in 1948 by bequests of Alexander W. Weddell and Virginia Chase Weddell, the income to be used as required	10,000.00
Willard Association Fund—Gift of the Willard Association in 1950, the income to be used as required	1,000.00
Withers Fund—Gifts of John Withers and other donors during the years 1851–70, the income to be used as required. (Formerly called the Forty Thousand Dollar Endowment Fund)	26,892.00
Woodhull Fund—Bequest of Margaret Willett Woodhull, received in 1946, the income to be used as required	50,000.00

FELLOWSHIP FUNDS

KING FELLOWSHIP FUND—Created in 1928 by bequest of Isabella Osborn King, the income to be used for a fellowship in biology 75,322.00

MILLER FELLOWSHIP FUND—Bequest of Robin Miller, received in 1954, the income to be used for fellowships in medicine for the study of cardiovascular disease 55,303.00

SANDERS FELLOWSHIP FUND—Bequest of Addie Sanders in 1928 in memory of her brother, Thomas Bradford Sanders, the income to be used for fellowships in various academic fields of study 210,957.74

PROFESSORSHIP FUNDS

ALUMNI PROFESSORSHIP FUND—Gifts of various alumni since 1911, the income to be used for an alumni professorship in mathematics 830.00

CARROLL PROFESSORSHIP FUND—Created by Mary A. Sharpe in 1928 in memory of Mitchell Carroll, the income to be used for a chair in archeology 500.00

CONGRESSIONAL PROFESSORSHIP FUND—Created in 1832 by gift of the United States of America by Act of Congress, the income to be used for professorships 158,710.00

DEPEW COURSE IN PUBLIC SPEAKING FUND—Created by May Depew in 1936, the income to be used for a course to be known as the "Chauncey M. Depew Course in Public Speaking." 170,592.00

ELTON PROFESSORSHIP FUND—Bequest of Romeo Elton of Exeter, England, in 1872, the income to be used for a professorship to be called the "Elton Professorship of Mental and Moral Philosophy" 14,510.00

FORD FOUNDATION PROFESSORSHIP FUND—Gift of the Ford Foundation, received in 1956, the income to be used to increase faculty salaries. After ten years, the principal sum may be used for either salary support or any other academic purpose 385,000.00

FRY PROFESSORSHIP FUNDS—Bequest of Annabel Lee Fry, received in 1945, in memory of her husband, Dr. Henry D. Fry, the income to be used for a professorship in physiology 106,067.98

Created in 1945 from income of the original fund, the income of the two funds to be used for a professorship in physiology 40,810.00

YULEE FUND—Bequest of Nannie Yulee Noble in 1929 in memory of her mother, Nancy Yulee, the income to be used for lectures in home economics 5,000.00

DESCRIPTION OF ENDOWMENT FUNDS (Continued)

August 31, 1956

SCHOOL FUNDS

Engineering	
Howard Lecture Fund—Created in 1952 by Frank A. Howard, the income to be used for lectures on engineering	3,620.00
School of Engineering Fund—Created in 1954, the income to be used for the School of Engineering	800.00
Government	
Rankin Fund—Bequest of John O. Rankin, received in 1951, the income to be used for the School of Government	279,705.00
Scottish Rite Fund—Created in 1928 by the Supreme Council of the Ancient and Accepted Scottish Rite of Freemasonry of the Southern Jurisdiction of the United States of America, as a permanent memorial to George Washington, The Mason, the income to be used to maintain a School of Government	1,000,000.00
Law	
Altizer Fund—Gift of Bertha E. M. Altizer in 1954, in memory of P. J. Altizer, the income to be used for the Law School	1,000.00
Medical	
Bartsch-Dunne Research Fund—Created in 1952 by Dr. Anna Bartsch-Dunne from income of the Bartsch Scholarship Fund, the income to be used for research in medicine	4,037.00
Borden Medical Fund—Created in 1936 by Dr. Daniel L. Borden and Jennie Ella Borden, in memory of William C. Borden, the income to be used for the School of Medicine	3,710.00
Collins Memorial Research Fund—Created in 1946 by various donors in memory of Dr. James Lloyd Collins, the income to be used for special research in surgery	2,830.00
Cooper Medical Research Fund—Bequest of Eleanor J. Cooper in 1905, on certain terms since modified by the Supreme Court of D. C. as follows: the income to be used toward the establishment and maintenance, in connection with the Medical Department of the University, of a Research Laboratory, the work of this laboratory to be devoted to the investigation of the nature, causation, prevention, and cure of malaria and other infectious and contagious diseases	10,000.00

CUMMINGS FUND—Bequest of Julia M. Cummings in 1955 in memory of Cecilia Cummings, the income to be used for research and education in cardiovascular and similar diseases 10,000.00

EPPLEY MEDICAL SCHOOL FUND—Bequest of Mary V. Eppley in 1951, the income to be used for cancer research in the School of Medicine 1,000.00

GARDNER MEDICAL SCHOOL FUND—Bequest of William D. Gardner in 1928, the income to be used for the School of Medicine 4,490.00

LEWIS MEDICAL SCHOOL FUND—Bequest of Samuel E. Lewis in 1925, the income to be used for the School of Medicine 32,300.00

MEYER MEDICAL SCHOOL FUND—Created in 1955 by gifts of various donors, the income to be used for the Eugene Meyer Chair of Medicine 280,872.95

RUFFIN MEDICAL SCHOOL FUND—Bequest of Dr. Sterling Ruffin in 1951, the income to be used for the School of Medicine 57,490.00

SCHOOL OF MEDICINE FUND—Created in 1940 by the various donors, the income to be used for the School of Medicine 13,004.00

SCHOOL OF MEDICINE CLASS OF 1954 FUND—Created in 1954 by gifts of various donors the income to be used for the School of Medicine 82.00

SHARPE MEDICAL SCHOOL FUND—Created by Mary A. Elizabeth M., and Sallie Sharpe in 1924, the income to be used for the School of Medicine 8,216.79

PHARMACY

GIBBS PHARMACY FUND—Created by M. G. Gibbs in 1927, the income to be used to aid in establishing and maintaining a commercial pharmacy course in connection with the School of Pharmacy 10,000.00

DESCRIPTION OF ENDOWMENT FUNDS (Continued)

August 31, 1956

HOSPITAL FUNDS

Cancer Clinic Fund—Created in 1953 by Mr. and Mrs. V. A. Klein, the income to be used for the Cancer Clinic	128.00
Chapman Hospital Fund—Bequest of Mrs. Susanna A. Chapman in 1911, the income to be used for the purposes of the free wards of the hospital	1,230.00
Clephane Hospital Fund—Gift in 1951 of Washington Alumnae of Zeta Tau Alpha Sorority, in memory of Beatrice A. Clephane, the income to be used for the hospital	1,000.00
General Hospital Fund—Created in 1929 by various donors, the income to be used for the hospital	1,445.00
Hirsh Hospital Fund—Bequest of Bella Hirsh in 1955, the income to be used for the hospital	37,431.00
Houser Hospital Fund—Bequest of E. Keller Houser, received in 1944, the income to be used to endow a room in memory of his daughter, Anna Victoria Houser	2,500.00
Kauffman Hospital Fund—Gift of Samuel H. Kauffman in 1954, the income to be used for the hospital	1,000.00
Kimmel Hospital Fund—Bequest of Annie Kimmel, received in 1932, the income to be used for the hospital	3,072.00
Kuhlbank Hospital Fund—Bequest of Freda Kuhlbank, received in 1930, the income to be added to the principal until the principal shall be large enough to maintain a bed in the White Ward of the hospital to be known as the "Freda Kuhlbank Bed"	1,634.00

Maloney Hospital Fund—*Created in 1952 by the Maloney Concrete Co., the income to be used for the hospital*	4,000.00
National Park Seminary Hospital Fund—Gift of students of National Park Seminary of Forest Glen, Maryland, in 1906, the income to be used toward the maintenance of a bed in the hospital	500.00
Reinhardt Hospital Fund—Bequest of Luisa Wynne Reinhardt in 1922, the income to be used for the hospital	500.00
Sanders Hospital Fund—Bequest of Beatrice E. Sanders in 1951, the income to be used for the Cancer Clinic	29,151.03
Strong Hospital Fund—Gift of estate of Hattie M. Strong in 1952 the income to be used for the hospital	15,000.00
Tree Hospital Fund—Created in 1911 by bequest of Lambert M. Tree, in memory of his mother, Mrs. Laura M. Tree, the income to be used to maintain a bed in the hospital, to be known as the "Laura M. Tree Bed"	10,000.00

Women's Board of the Hospital

Burton Hospital Fund—Created by Grace C. Burton in 1950, the income to be used for medicine for indigent persons	7,500.00
Woodbury Hospital Fund—Bequest of Ellen DeQ. Woodbury in 1909, the income to be used for the reception and treatment of female patients in the hospital	10,000.00

HOSPITAL EQUIPMENT FUNDS

Women's Board Hospital Equipment Fund—Created in 1954 by the Women's Board of the Hospital, the income to be used for the purchase of equipment	22,463.40

DESCRIPTION OF ENDOWMENT FINDS (Continued)

August 31, 1956

PLANT FUNDS

Graduate Endowment Fund—Created by the Class of 1926, to be used for the acquisition of sites, erection of buildings, and maintenance and purchase of equipment. Only the income may be used until Fund reaches $50,000 when income, and principal over $50,000, may be used	14,926.00
National University Library Fund—Created in 1955 by transfer of the assets of National University, the income to be used toward the maintenance and extension of the Law Library	18,390.00
Schouler National University Library Fund—Bequest of James Schouler in 1921 to the National University Law School, the income to be used to purchase books for the Law Library	1,520.00

LIBRARY BOOK FUNDS

Gladstone Library Fund—Gift of Ethel S. Gladstone in 1951, the income to be used to purchase books for the Library	175.00
Hensey Library Fund—Gift of D. C. Masonic Clubs in 1951, the income to be used to purchase books for the Library	200.00
Howard Library Fund—Gift of Colonel Deane Childs Howard in 1943 in memory of Captain Deane Childs Howard, Jr., the income to be used to purchase books for the Library	10,000.00
Meyer Library Fund—Gift of Eugene Meyer in 1944, the income to be used to purchase books for the Library	1,000.00
Noyes Library Fund—Bequest of Theodore W. Noyes, received in 1947, the income to be used to purchase books for the library	10,000.00
Swisher Alcove Book Fund—Gift of Dr. Charles Clinton Swisher in 1941, in trust for the Historical Society of the University, the income to be used to purchase books for the Swisher Alcove in the Library	2,121.00

SCHOLARSHIP FUNDS

ANDREWS MEMORIAL SCHOLARSHIP FUND—Gift of Belle Fisk Andrews in 1920 in memory of her husband, Byron Andrews, the income to be used for scholarships "for ambitious and needy students of English, Latin, journalism, history, literature, or political science" 5,194.95

BARTSCH SCHOLARSHIP FUND—Created by Dr. Anna Bartsch-Dunne in 1946, the income to be used for a scholarship for a woman in the School of Medicine and an internship for a woman in the University Hospital 20,034.00

BRADLEY SCHOLARSHIP FUND—Bequest of Alice Bradley in 1954 in memory of Everett Lamont Bradley, the income to be used for a scholarship in the School of Medicine 2,760.00

CARR SCHOLARSHIP FUND—Created by the bequest of Emma K. Carr in 1932, the income to be used for scholarships for young white men 48,610.00

CARTER, H. H. SCHOLARSHIP FUND—Gift of Maria M. Carter in 1896 in memory of her husband, Henry Harding Carter, the income to be used for scholarships in civil engineering 5,000.00

CARTER, M. M., SCHOLARSHIP FUND—Gift of Maria M. Carter in 1871, the income to be used for scholarships for young men 1,000.00

DESCRIPTION OF ENDOWMENT FUNDS (Continued)

August 31, 1956

SCHOLARSHIP FUNDS (Continued)

COLUMBIAN WOMEN SCHOLARSHIP FUNDS

BROWN SCHOLARSHIP FUND—Created by the College Women's Club of Washington, D. C., in 1925, in memory of Elizabeth V. Brown, the income to be used for scholarships in the School of Education	1,200.00
CHAMBERLIN SCHOLARSHIP FUND—Created by the Columbian Women of The George Washington University in 1932 in memory of Grace Ross Chamberlin, the income to be used for scholarships for young women	2,300.00
COLLEGE WOMEN'S SCHOLARSHIP FUND—Gift of the College Women's Club of Washington, D. C., in 1926, the income to be used for scholarships	500.00
FOUNDERS OF COLUMBIAN WOMEN SCHOLARSHIP FUND—Created by the Columbian Women of The George Washington University in 1920, the income to be used for scholarships for women in Columbian College	5,000.00
HERRON SCHOLARSHIP FUND—Created by the Columbian Women of The George Washington University in 1925 in memory of Lillian Young Herron, the income to be used for scholarships for women in Columbian College	5,000.00
KNAPP SCHOLARSHIP FUND—Gift of the Columbian Women of The George Washington University in 1915 in memory of Nellie Maynard Knapp, the income to be used for scholarships for women	5,000.00
MCWILLIAM SCHOLARSHIP FUND—Bequest of Janet McWilliam, former president of Columbian Women, to the Columbian Women of The George Washington University, transferred to The University in 1954, the income to be used for scholarships	1,000.00
WILSON SCHOLARSHIP FUND—Gift of Elizabeth Wilson in 1926 in memory of her parents, Lewes D. and Myrtie H. Wilson, the income to be used for scholarships in the School of Medicine	1,000.00

DAVIS SCHOLARSHIP FUND—Gift of Isaac Davis in 1869, the income to be used for scholarships 1,000.00

D. C.—D. A. R. SCHOLARSHIP FUND—Created in 1952 by the D. C.—D. A. R., the income to be used for scholarships for descendants of patriots of the American Revolution 8,225.00

DORSEY SCHOLARSHIP FUND—Created in 1947 by Harryman Dorsey in memory of Charles Worthington Dorsey, the income to be used for scholarships 12,914.00

ERWIN SCHOLARSHIP FUND—Gift of Helen B. Erwin in 1955 in memory of Henry Parsons Erwin, the income to be used for a scholarship in the School of Engineering 5,000.00

FARNHAM SCHOLARSHIP FUND—Gift of Mrs. Robert Farnham in 1871, the income to be used for scholarships in Columbian College 1,000.00

FISHER SCHOLARSHIP FUND—Bequest of Esther Brigham Fisher in 1951, the income to be added to principal until principal reaches $1,000.00, after which the income shall be used for scholarships 1,000.00

HAMPEL SCHOLARSHIP FUND—Gift of Evelyn Hampel Young in 1948 in memory of her mother, Anna Spickel Hampel, the income to be used for Scholarships for married women in the School of Education or Columbian College 500.00

HARVEY SCHOLARSHIP FUND—Bequest of Emma Elizabeth Harvey in 1923, in memory of her daughter, Elma Lewis Harvey, the income to be used for scholarships in Columbian College for young women of the Protestant faith and of the Caucasian race 4,650.63

HAZELTON SCHOLARSHIP FUND—Bequest of Lillie S. Hazelton in 1950, the income to be used for scholarships. 5,000.00

KENDALL SCHOLARSHIP FUND—Gift of Amos Kendall in 1869, the income to be used for a scholarship now designated by the Board of Trustees as one of the two High School Scholarships assigned to Western High School 5,960.00

DESCRIPTION OF ENDOWMENT FUNDS (Continued)

August 31, 1956

SCHOLARSHIP FUNDS (Continued)

Morehouse Scholarship Fund—Created by A. Morehouse in 1861, the income to be used for scholarships for undergraduates intending to enter the Christian ministry	1,500.00
Pearson Scholarship Fund—Bequest of Paul Pearson in 1944, the income to be used for scholarships in the School of Pharmacy	2,840.00
Powell Scholarship Fund—Created by Levin M. Powell in 1886, the income to be used to train young men for entrance in the United States Naval Academy or to fit them to become mates and masters in the Merchant Marine Service of the United States	50,000.00
Shepard Scholarship Fund—Bequest of Lula M. Shepard in 1946, the income to be used for scholarships in the School of Government	10,000.00
Spencer Scholarship Fund—Created by Louisa J. Spencer in 1918, the income to be used for scholarships	7,422.20
Stone Scholarship Fund—An anonymous gift in 1893 in memory of Mary Lowell Stone, the income to be used for scholarships for women students of science in Columbian College	2,000.00
Swisher Scholarship Fund—Created by Dr. Charles Clinton Swisher in 1941, the income to be used to award scholarships in Medieval History	14,442.00
Walker Scholarship Fund—Gift of William Walker in 1824, the income to be used for scholarships for undergraduates intending to enter the Christian ministry	2,500.00
Withington Scholarship Fund—Gift of the New York Baptist Theological Seminary in 1830, on behalf of John Withington, the income to be used for scholarships	1,954.00
Woodhull Scholarship Fund—Bequest of Ellen M. E. Woodhull in 1921, the income to be used for scholarships in Columbian College	600.00

BURNS MEMORIAL AWARD FUND—Gift of Persia Burns in 1937 in memory of her son, Byrne Thurtell Burns, the income to be used for an annual award in chemistry 1,000.00

COWLES PRIZE FUND—Created in 1943 by John Henry Cowles, the income to be used for annual awards in the School of Government 3,000.00

CROISSANT PRIZE AWARD—Bequest of DeWitt Clinton Croissant in 1941, the income to be used to award an annual prize for excellence in dramatics or dramatic studies 1,000.00

CUTTER PRIZE FUND—Gift of Marion Kendall Cutter in 1902, in memory of E. K. Cutter, the income to be used for an annual award for excellence in the study of English 1,000.00

DAVIS PRIZE FUND—Gift of Isaac Davis in 1847, the income to be used for annual awards to members of the senior class who have made the greatest progress in elocution since their connection with the University 700.00

ESSARY PRIZE FUND—Gift of Helen Essary Murphy in 1948 in memory of her late husband, Jesse Frederick Essary, the income to be used for an annual award in journalism 3,000.00

EVANS MEMORIAL AWARD FUND—Created in 1937 by friends of Joshua Evans III, the income to be used to establish a prize, as a memorial to an "outstanding life," to be awarded annually "to that man in the graduating class who has demonstrated his signal ability in the social and political sciences and who has given promise of the interpretation of that ability in good citizenship among his fellows" 1,500.00

FITCH PRIZE FUND—Gift of James E. Fitch in 1883 in memory of Willie E. Fitch, the income to be used for an annual award to a senior student for the best general examination in chemistry 1,000.00

DESCRIPTION OF ENDOWMENT FUNDS (Continued)

August 31, 1955

PRIZE FINDS (Continued)

Goddard Prize Fund—Gifts of Mary W. Goddard, Alice Douglas Goddard, and Frederick J. Goddard, in 1923, in memory of Morgan Richardson Goddard, Edward Carrington Goddard, and James Douglas Goddard; added to in 1941 by a gift of Frederick J. Goddard in memory of Alice Douglas Goddard. The income shall be used to award four cash prizes annually to the students making the highest averages in commerce, French language and literature, pharmacy, and American literature, respectively	5,520.00
Hubbard Prize Fund—Gift of Gertrude M. Hubbard in 1907 in memory of her husband, Gardiner G. Hubbard, the income to be used for an annual award for excellence in American history	1,000.00
Larner Prize Fund—Bequest of John B. Larner in 1933, the income to be used for an annual award in the Law School	800.00
Mahler Prize Fund—Gift of Martin Mahler in 1953, the income to be used for the "Martin Mahler Prize in Materials Testing"	100.00
Ordronaux Prize Fund—Bequest of John Ordronaux in 1909, the income to be used for annual awards in the Law and Medical Schools	5,000.00
Ruggles Prize Fund—Gift of William Ruggles in 1859, the income to be used for an annual award for excellence in mathematics	500.00
Staughton-Elton Prize Fund—Created by gift of Romeo Elton of Exeter, England, in 1860, the income to be used for annual awards for excellence in the Latin and Greek languages, one to be called the Staughton Prize in Latin, the other the Elton Prize in Greek	500.00

STERRETT PRIZE FUND—Gift of the Reverend J. MacBride Sterrett in 1911 in memory of his son, J. MacBride Sterrett, Jr., the income to be used for books to be awarded annually to the student obtaining the highest average in general physics. 500.00

SWISHER PRIZE FUND—Gift of Charles Claxton Swisher in 1941, the income to be applied yearly to enlarging the sum set apart for the Historical Prize established in his name by the Historical Club, December 7, 1936. . . . . 1,000.00

WALSH PRIZE FUND—Gift of Thomas F. Walsh in 1901, the income to be used for an annual award for the best essay on some topic in Irish history 1,000.00

WEDDELL PRIZE FUND—Gift of Virginia Chase Weddell in 1923, the income to be used to award annually the Alexander Wilbourne Weddell Prize to the student submitting the best essay upon the general subject of the promotion of peace among the nations of the world. 5,000.00

RESERVES FOR PROTECTION OF INVESTMENTS OF ENDOWMENT FUNDS

RESERVE FOR PROTECTION OF CONSOLIDATED ENDOWMENT FUNDS INVESTMENTS—Created from gains arising from the sale of investments and a portion of the net income of Consolidated Endowment Funds Investments 99,589.99

RESERVE FOR PROTECTION OF SCOTTISH RITE ENDOWMENT FUND INVESTMENTS—Created from gains arising from the sale of Scottish Rite Investments. 59,987.82

DESCRIPTION OF PLANT FUNDS

August 31, 1956

Field House Fund—Created by the Class of 1946 to assist in building a field house		780.00
Ford Foundation Hospital Building Fund—Gift of the Ford Foundation for additional Hospital construction		113,250.00
Hospital Equipment Funds—		
Cancer Clinic—Beta Gamma Phi Sorority		437.31
Cancer Clinic—Special		2,947.68
Cancer Clinic—Zito		406.79
Cardiovascular Department		423.63
Multiple Sclerosis		44.00
Obstetrics and Gynecology		1,538.85
Physical Medicine		202.52
Prenatal Nursery		102.91
Women's Board Gift Shop		1,828.19
Law Center Fund—Created in 1945 by various donors, to be used for the acquisition of land and the erection of a building for the use of the Law School		97,703.11
Library Book Funds—Gifts of Various Donors	Created	
American Diplomatic History Library Fund	1950	46.00
Brooklyn Alumni Club Library Fund	1950	405.50
Chase, Ruth Judith, Library Fund	1951	50.00
Class of 1945 Library Fund	1945	58.75

Council of Religious Organizations Library Fund		
George, Carlotta, Library Fund	1943	310.56
Hellenic Society Library Fund	..	8.08
Merrill Lynch, Pierce, Fenner and Beane Library Fund	1945	225.00
Noyes, Theodore W., Library Fund	1955	478.59
Phi Alpha Delta Library Fund	1947	3,054.04
Rosen Library Fund		20.00
	1948	308.23

Marion M. Bond and Mary A. Wood Memorial Fund—Anonymous gift in 1953 to create a room for meditation and prayer in the Warwick Memorial Building 2,000.00

Pairo Fund—Created in 1931 by Richard E. Pairo, by devise and bequest, to be used for athletics 386,895.60

School of Engineering Building Fund—Created in 1946 by Mr. and Mrs. Charles H. Tompkins, to be used toward the erection of a School of Engineering Building 53,518.67

School of Medicine Building Fund—Created in 1945 by various donors, to be used toward the erection of a School of Medicine Building 4,261.00

Women's Activities Building Fund—Created in 1939 by various donors to erect a women's activities building 6,142.00

FORMS FOR BEQUESTS

To assist friends of the University who wish to make provision in their wills for the increasing needs of the University, the following wordings are suggested:

"I give and bequeath to the Trustees of The George Washington University, a corporation charted by Act of Congress, and located in Washington, D. C. .Dollars."

(1) (Unrestricted)
"to be used for the benefit of The George Washington University in such manner as the Trustees thereof may direct."

or (2) (Permanent Fund: income unrestricted)
"to constitute an endowment fund to be known as the Fund, such fund to be kept invested by the Trustees of The George Washington University and the annual income thereof used for the benefit of the University in such manner as the Trustees thereof may direct."

or (3) (Specific Purposes)
"to be used for the following purposes," (here specify in detail the purposes).

SUMMARIES OF DOCTORAL DISSERTATIONS

1956

THE GEORGE WASHINGTON UNIVERSITY

BULLETIN

SUMMARIES OF
DOCTORAL DISSERTATIONS
1956

WASHINGTON 6, D. C.

PUBLISHED IN DECEMBER
MCMLVI

BY THE UNIVERSITY



PREFATORY NOTE

This number of the University BULLETIN contains summaries of the dissertations which have been accepted during 1956, in partial satisfaction of the requirements for the degrees of Doctor of Philosophy, Doctor of Juridical Science, Doctor of Education, and Doctor of Business Administration at The George Washington University.

AVAILABILITY OF DISSERTATIONS

The dissertations in typescript form are filed in the University Library, where they may be consulted by students interested in examining the complete texts.

Information about inter-library loans or photoprint and microfilm copies of dissertations listed in this and earlier issues may be obtained from the University Librarian.

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SUMMARIES OF DISSERTATIONS SUBMITTED FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

NONRESONANT ABSORPTION AND COLLISION DIAMETERS OF SYMMETRIC TOP MOLECULES

by GEORGE BIRNBAUM*

Symmetric top molecules have a component of the permanent dipole moment parallel to the direction of the total angular momentum which is stationary in space. This stationary moment can absorb energy from an electromagnetic field because of the effect of molecular collisions which reorients the molecular axis. The resulting spectrum, which is of the non-resonant or Debye type, was mapped out for CH_3Cl and CH_3Br by Bleaney and Loubser from measurements over the wavelength region 8 to 0.95 cm. Using theoretical intensities and choosing the value of line width to obtain the best fit, they were able to accurately represent the experimental results by the Debye equation.

Van Vleck and Weisskopf derived an expression for the absorption coefficient of pressure-broadened spectral lines which in the limit of zero frequency reduces to the Debye equation. They also rederived the Debye equation directly by assuming that the dipole can be regarded as stationary between collisions, and that after each collision the probability of angular distribution of a dipole is in accordance with the Boltzmann law. However, the magnitude of the line width was not given by their theory but appeared as an empirical parameter.

Anderson developed a theory adequate for predicting the breadths of resonant lines in the microwave region by taking into account transitions among quantum states caused by collisions. In essence, the interaction perturbation induces transitions between the states i and f with a total probability S_{if} integrated over the path of the molecule, where S_{if} depends on the impact parameter b, the distance of closest approach. The contributions to the collision cross section arising from the different impact parameters are averaged by the equation $\sigma=\int_0^\infty S_{if}2\pi bdb$. The line width and collision diameter are related to the cross section by the usual kinetic formula. After lengthy and complicated calculations, Anderson obtained a simple formula for the line width in the case of dipole dipole interactions which he applied successfully to the lines of the NH_3 inversion spectrum. He argued that this formula should apply when the inversion frequency is zero and the resulting spectrum of the nonresonant type, as is the case for most symmetric top molecules, but on closer inspection this argument proved to be incorrect.

Anderson's theory was seen to lead to a small spacial reorientation of

* A.B. 1941 Brooklyn College; M.S. 1949, The George Washington University; Ph.D. February 22, 1956 Professor in charge of research, Thomas Benjamin Brown, [illegible] of Physics

the molecule in the rotational states which are usually well populated. It was argued that these collisions have only a small effect on disturbing the original orientation of the molecule and should therefore lead to line widths smaller than those predicted by Anderson.

The present investigation was undertaken to obtain the nonresonant spectra, and from this the collision diameters of a number of symmetric top molecules with a wide range of dipole moments and moments of inertia, and to see how well these diameters could be accounted for by theory. Three complete microwave setups were used to measure the absorption at 1,193 and 2,216, 9,280, and 23,340 Mc by a cavity method. Measurements were made on CH_3F, CH_3Cl, CH_3Br, CH_3I, CH_3CN, CHF_3, $CCl F_3$, and $(CH_3)_3N$ at pressures up to 2 atmospheres unless limited by the vapor pressure .

The absorption was determined primarily from measurements of the cavity transmission coefficient with and without the gas. As a sensitive test of the crystal detector law, however, the absorption was also determined from measurements of the Q, for when the detector departs from square law operation, it was shown that the error in each method is of opposite sign. The cavity parameters were determined by scaling the resonance curve displayed on the screen of a cathode ray tube. The cavity performance with regard to the effect of pressure, mode purity, and change of transmission and Q with tuning were tested with zero-loss gases. The over-all accuracy, unless limited by the sensitivity of measurement, was estimated to be 3 per cent from comparisons of the absorption obtained by the Q and amplitude methods, by different cavities and apparatus, and from comparisons at various frequencies.

In analyzing the data, additional absorption due to the low frequency wings of the rotational lines was found to be quite important, especially at 9,280 Mc and above. Theoretical calculations of the order of magnitude of this absorption were made which were found to be in rough agreement with experiment, and which were therefore useful in the analysis of the nonresonant absorption spectra. The data at the lowest frequency, where rotational overlap was negligible, were selected for comparison with the Debye equation, although as a check the comparison was extended for some molecules to other frequencies. In this analysis, pressure was used as the variable. If the line width is proportional to pressure, as is to be expected for gases at low pressure, and as was deduced from the experiment, then the absorption curve is symmetrical in the variables frequency and pressure. In this circumstance, the features of the spectrum may be delineated by either of the variables frequency or pressure, although the latter is far simpler to use experimentally.

The present results, unlike those of Bleaney and Loubser, were found

not to be well represented by the Debye equation. With the exception of $CClF_3$ and $(CH_3)_3N$, the absorption in the low pressure (or high frequency) wing was greater than that given by the Debye equation fitted to the data in the region of maximum absorption. In all cases, the experimental intensity was found to be less than the theoretical value by about 10 to 15 per cent. These results are characteristic of a distribution of line widths, an effect to be expected from the theory. The results of Bleaney and Loubser are not only qualitatively different from those obtained here, but also differ in absolute value by an amount outside the present limits of experimental error. In this circumstance, the most substantial confirmation of the accuracy of the work reported in this paper lies in the detailed investigation of sources of errors and the internal consistency of an especially extensive set of measurements.

For $CClF_3$ and $(CH_3)_3N$, the shape of the spectra were well represented by the Debye equation, although the experimental intensity was less than computed from the reported value of the dipole moment. In the case of $CClF_3$, the permanent moment of 0.39×10^{-18} esu obtained by the dielectric constant-temperature variation method appeared to be not well established. A moment about 10 per cent lower, 0.35×10^{-18} esu, was obtained from the experimental intensity. Indeed, when the nonresonant spectrum is not complicated by a distribution of line widths, it should yield values of small dipole moments considerably more accurate than those obtained from measurements of the temperature variation of the static dielectric constant. The permanent moment of $(CH_3)_3N$, on the other hand, appeared to be reasonably well established. The reason for the discrepancy here is unknown, but its behavior is anomalous in that no rotational spectrum has been found for this molecule.

It was shown that in the low pressure region a precise and simple definition can be given for the average line width. The corresponding line widths obtained on the basis of Anderson's theory did not qualitatively or quantitatively account for the observed values.

From the experimental average widths, collision diameters were obtained which represent the relative effectiveness of collisions in changing the orientation of the molecules. Where comparisons could be made, these diameters were found to be substantially larger than the kinetic values, which tends to confirm that long range dipole-dipole interactions are involved, and smaller than those derived from rotational spectral lines. In essence, this may be taken to indicate that it is more difficult to reorient the molecule than to change the rotational energy, and even more difficult to transfer kinetic momentum.

To facilitate the evaluation of a number of quantities involving a sum over the rotational states, closed expressions were derived by replacing the sums by integrals. The quantities in question include the Boltzmann

average of the stationary component of dipole moment, moment squared, and the absorption due to the low frequency wings of the entire rotational spectrum.

KINETICS AND MECHANISM OF THE CYCLIZATION OF SUBSTITUTED ALKYLNITROGUANIDINES

by CARL BOYARS*

The cyclization of N-β-nitroxy(or halo-)alkyl-N′-nitroguanidines and N-γ-nitroxyalkyl-N′-nitroguanidines to give 1-nitro-2-amino-Δ^2-1,3-diazacyclopentene and -diazacyclohexene salts, respectively, was first reported by A. F. McKay in 1950–1951. Other cases of this isomerization have also been published.

In this investigation the kinetics of this reaction in aqueous solution have been studied by a conductimetric technique since the linear compounds are non-ionic and the cyclic products are ionic. The limited solubility of the linear compounds in water restricts the investigation to very dilute solutions, in which linear relationships of conductance to concentration of cyclic products hold. The validity of the conductimetric technique was established by an independent gravimetric determination. In the later stages of the reaction, hydrolysis of the cyclic product vitiates the linear relationship between conductance and extent of reaction. The compounds were synthesized by standard, previously published procedures.

The relative rates of cyclization have been found to be N-β-bromoethyl- > N-β-chloroethyl- > N-β-nitroxyethyl- > N-γ-nitroxypropyl- > N-β-nitroxypropyl-N′-nitroguanidine. Specific rate constants were determined for all except the bromo compound which cyclizes so readily that it was practically completely cyclized during purification by recrystallization. The reaction rates obeyed a first order law. Two methods were used for the computation of rate constant. One involves a standard least squares treatment of the linear relationship between log concentration and time of reaction. The other method involves a least squares treatment applied to the exponential form of the first order rate equation after the introduction of a Taylor expansion. The latter method requires only that a first order rate expression hold and that a proportionality relationship exist between extent of reaction and the physical property measured; neither the proportionality constant nor any information about concentrations need be known.

The rate constants found are given in Table 1, which follows.

* B.S. 1949, College of the City of New York. M.S. 1951, The George Washington University. Ph.D. conferred February 22, 1952. Professor in charge of research: William Heinrich Saier, *Associate Professor of Chemistry*.

TABLE 1

RATE CONSTANTS FOR THE CYCLIZATION OF SUBSTITUTED-N-ALKYL-N'-NITROGUANIDINES

N'-nitroguanidine Derivative	T(°C)	k(sec.$^{-1}$)
N-β-Chloroethyl-	49.87	61.6×10^{-4}
	39.85	17.7 "
	30.00	4.75 "
N-β-Nitroxypropyl-	49.83	49.9×10^{-4}
	39.87	12.19 "
	30.00	2.68 "
N-β-Nitroxyethyl-	49.84	19.41×10^{-4}
	39.85	5.41 "
	30.00	1.366 "
N-γ-Nitroxypropyl-	50.00	11.10×10^{-4}
	40.00	3.14 "

Plots of log k against 1/T°(K) for those compounds whose rates were measured at three temperatures show a very good fit to the straight line required by the Arrhenius equation, $k = Ae^{-Ea/RT}$. The energy of activation, Ea, and the frequency factor, A, together with the entropy of activation, ΔS*, obtained by the application of Eyring's transition state theory are given in Table 2, below:

TABLE 2

ARRHENIUS CONSTANTS AND ENTROPIES OF ACTIVATION FOR THE CYCLIZATION OF SUBSTITUTED-N-ALKYL-N'-NITROGUANIDINES

N'-nitroguanidine Derivative	Ea(kcal.)	A(sec.$^{-1}$)	ΔS*(e.u.)
N-β-Chloroethyl-	25.09 ± .06	5.90×10^{10}	−2.2 ± 0.2
N-β-Nitroxypropyl-	28.69 ± .36	1.30×10^{14}	+4.0 ± 1.1
N-β-Nitroxyethyl-	26.03 ± .08	8.02×10^{12}	−1.6 ± 0.3
N-γ-Nitroxypropyl-	25.39 ± .21	1.65×10^{12}	−4.7 ± 0.7

Some indications as to reaction mechanism can be obtained from the rates and the energies and entropies of activation. The relative rates of the β-bromoethyl, β-chloroethyl, and β-nitroxyethyl compounds are in the order expected from the bond energies of the C-Br, C-Cl, and C-O covalent links. Kinetic studies of hydrolysis of alkyl halides, reported in the literature, also show that bromo compounds react more rapidly than chloro compounds. An anion mechanism is not expected since the cyclization of N-β-chloroethyl-N'-nitroguanidine in the presence of strong alkali (where an anion mechanism is likely) is reported to yield a different

product. The more rapid cyclization of the N-β-nitroxyethyl-, as compared to the N-β-nitroxypropyl-N′-nitroguanidine, favors an internal S_N2 mechanism rather than S_N1. The rate-controlling step in an S_N1 mechanism, formation of a carbonium ion, occurs more readily when the carbon atom is a secondary rather than a primary one. On the other hand, presence of the additional methyl group hinders "backside attack" of nitrimine nitrogen required by the unimolecular S_N2 mechanism.

The lower energy of activation for N-β-chloroethyl- than for N-β-nitroxyethyl-N′-nitroguanidine reflects the difference in bond energy between the chloro and nitroxy links to carbon. The higher activation energy for N-β-nitroxypropyl- than for N-β-nitroxyethyl-N′-nitroguanidine is due to the additional energy needed to overcome the steric hindrance of the substituent methyl group to backside attack. The 6 e.u. higher value for entropy of activation of N-β-nitroxypropyl- as compared to N-β-nitroxyethyl-N′-nitroguanidine can be attributed to a greater separation of the C-O nuclei in the transition state of the sec- compound as compared to the primary. The increased entropy of activation corresponds to a larger q T term where q is the thermal energy necessary for stretching the C-O bond from the ground state to the activated state. The more negative entropy of activation for formation of the 6- as compared to the 5-membered ring may be regarded as an illustration of the Price-Hammett rule that, in a polar reaction, the more complex (entropy containing) molecule loses more in entropy in attaining the activated state.

The experimental data on the thermodynamic quantities of activation are supported by data from analogous reactions reported in the literature. Increase of both energy and entropy of activation in S_N2 reactions when a secondary halide is compared to a primary halide appears to be quite common. Kinetic investigations of the isomerization of *w*-chloroalkyl phenyl sulfides to cyclic sulfonium halides and of the conversion of *w*-haloalkylamines to cyclic imines both reveal lower entropies of activation for formation of the 6-membered ring than for the 5-membered ring. The investigation of the cyclization of *w*-haloalkylamines also reveals that both energy and entropy of activation are increased by substitution of a methyl group at the carbon from which halogen is displaced in the course of the reaction. This latter reaction, therefore, also appears to proceed by an internal S_N2 mechanism.

A COMPARATIVE STUDY OF COLICINES PRODUCED BY THREE STRAINS OF *ESCHERICHIA COLI*

by NAZAR NADEEF EL SHAWI*

Colicines are a group of substances secreted by certain strains of coliform bacteria which prevent the growth of certain members of the *Enterobacteriaceae*. Many inconsistent reports on the nature of these compounds and their secretion have appeared in the literature for the last half century. Knowledge of these compounds and the organisms that produce them will aid in understanding the phenomenon of microbial antagonism.

The optimum conditions for colicine production and the nature of its production were studied with three strains of *Escherichia coli* (*E. coli* 534, *E. coli* V, and *E. coli* CF_1). Examination and comparison of the colicine produced by these organisms were made.

None of the test organisms secreted colicine in stationary culture. However, when these cultures were aerated, colicine was obtained in the culture fluid. To study the amount of aeration necessary for colicine production, a constant volume of fluid culture was placed in Erlenmeyer flasks of different sizes, thus varying the surface area of the culture and exposing it to different quantities of air. The result of this experiment indicated that to obtain colicine in fluid culture a minimum amount of aeration is necessary regardless of the number of organisms in the culture.

It was found that the secretion of the antibiotic, by the producer organism, is extremely sensitive to the incubating temperature of the organism. Colicine is produced in fluid culture at 37 C. but not at room temperature. Growth curve studies indicated that colicine activity begins to appear and reaches a maximum at the phase of negative growth-acceleration. The activity then declines as soon as the stationary phase is reached and disappears after a certain time in this phase. It was proposed that colicine is possibly produced in the logarithmic phase in undetectable quantities and reaches a detectable concentration in the phase of negative growth-acceleration. As for the destruction of colicine in the stationary phase, the possible liberation of a destructive enzyme, "colicinase" by the dead cell in this phase was postulated.

Acetone fractionation was utilized to isolate the active fractions. By this method three antibiotically different fractions were isolated from the cell-free culture fluid of *E. coli* 534. However, only one fraction was obtained from each of the other two organisms. Spectrum studies on the acetone-precipitated fraction showed that the fraction precipitated by 90

* B.S. 1952, Michigan State University; Ph.D. conferred February 23, 1956. Professor in charge of research: Leland Wilbur Parr, *Professor of Bacteriology*.

per cent acetone from the culture fluid of all three organisms possessed the same field of action and indicated the possibility of the secretion of more than one colicine by *E. coli* CF_1 and *E. coli* V. Ammonium sulfate was also utilized for the precipitation of colicine. Correlation of the spectra of the ammonium sulfate precipitates and the acetone precipitates indirectly showed that *E. coli* CF_1 and *E. coli* V secrete at least two active substances.

The colicines investigated were soluble in water, 5 per cent phenol, glacial acetic acid, and concentrated solutions of urea, glycerol, and salicylic acid; they were not soluble in ether, chloroform, 95 per cent ethyl alcohol, acetone, isopropyl alcohol, benzene, or dioxane. Ammonium sulfate, lead acetate, sodium sulfate, trichloracetic acid, phosphotungstic acid, mercuric chloride, and picric acid precipitated all the active substances which were investigated. None of the antibiotics investigated was diffusible through cellophane. The antibiotics withstood heating at 100 C. for one hour and 56 C. for two hours, but they were destroyed at 120 C. for five minutes. All the active substances gave positive ninhydrin, biuret, Millon's, and xanthoproteic reactions for protein. Upon prolonged heating the substances decomposed with evolution of the familiar odor of burned protein. The activity of the colicines investigated was hindered to a varying degree by proteolytic enzymes (one per cent solutions of pepsin, trypsin, and papain). The effect of hydrogen ion concentration on these colicines was studied. When assayed immediately after adjustment in pH all the colicines were shown to retain virtually all their activity over a pH range of approximately 1.0 to 12.0. Difficulty was encountered in the determination of the isoelectric points of the different colicines. A rough estimation gave an isoelectric point for the material from *E. coli* 534 at about 4.5, the material from *E. coli* CF_1 at pH 4.0, and that of the material from *E. coli* V at about pH 4.2. All the above properties of the antibiotics suggest their protein nature.

An attempt was made to purify the colicines, utilizing flowing type paper electrophoresis. Experimental evidence indicated that the colicines are permanently adsorbed to the filter paper sheet. However, the electrophoretic studies indirectly confirmed the finding that one of the colicine-producing organisms (*E. coli* 534) produces at least three active substances.

SOME ASPECTS OF THE METABOLISM OF TRIETHYLENE MELAMINE

by EDWIN IRA GOLDENTHAL*

A systematic investigation of the biological properties of sulfur and nitrogen mustards led to the use of triethylene melamine (TEM) as an effective chemotherapeutic agent in certain forms of neoplastic disease. In 1949, TEM was found to possess nitrogen mustard-like effects on experimental tumors and leukemia in mice in several independent investigations (Rose *et al.*, 1950; Lewis *et al.*, 1950; Burchenal *et al.*, 1950). The first clinical report of the use of this agent was made in 1950 by Rhoads. The discovery of TEM represented an important advance in the practical management of certain neoplastic conditions since it was effective after oral administration and evoked little or no gastro-intestinal toxicity, a characteristic side reaction of the nitrogen mustards. The results of clinical trials established TEM as one of the more useful carcinostatic agents, especially valuable in the treatment of neoplasms arising from the hematopoietic tissues. However, in prolonged use of TEM, as with the nitrogen mustards and other similar compounds, a resistance to the drug is acquired and its effectiveness diminished. The rationale for the use of TEM rests upon the chemical characteristics of the drug when in solution. In an acid medium TEM is converted to a highly reactive quaternary ethylenimonium compound, which is assumed to be responsible for its ultimate carcinostatic action. A study of the metabolic transformation of TEM was of interest in an attempt to gain further information on its mechanism of action.

The purpose of the present investigation was to study the *in vivo* behavior of TEM, with special reference to the nature of its urinary metabolites. Since the drug is extremely toxic and the therapeutic dose necessarily small, the application of radioactive techniques appeared well suited for tracing minute amounts of the drug. The compound was labeled with carbon-14 in the triazine ring in one preparation, and in the ethylenimino group in another. Since the effects of TEM resemble those produced by nitrogen mustard and X-irradiation, another approach was made through the study of the comparative protective action of certain compounds against the lethality of TEM, nitrogen mustard, and X-irradiation.

A major portion of the radioactivity, following administration of triazine-labeled TEM-C^{14} to CAF, and DBA/2 mice, was excreted in the urine. One to 2 per cent of the injected radioactivity was found in

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the exhaled carbon dioxide in twenty-four hours. The major urinary metabolite was identified as cyanuric acid by paper chromatography and by inverse isotopic dilution. Cyanuric acid is a product shown to be obtainable by the hydrolysis of TEM with dilute sodium hydroxide. No unchanged TEM was excreted in the urine. These results indicated that a major portion of the triazine moiety of TEM remained intact during the metabolism of the compound. On the basis of the findings of the metabolism of triazine-labeled TEM-C^{14} and a similar compound, triethylenephosphoramide, it appeared that the biological properties of TEM were correlated with the ethylenimino group split off from the triazine ring during its metabolism or to the small proportion of intact drug which remained in the animal.

TEM, therefore, was labeled in the ethylenimino carbons to trace the metabolism of the drug. CAF_1 and DBA/2 mice receiving ethylenimino-labeled TEM-C^{14} excreted between 1 and 2 per cent of the administered dose as $C^{14}O_2$ in twenty-four hours. This indicates that only a trace of the ethylenimino-labeled TEM-C^{14} was completely oxidized in the mouse. These results are very similar to those obtained for the radioactive carbon dioxide excretion of the triazine-labeled TEM-C^{14}. The percentage of radioactivity excreted in the urine of mice administered the ethylenimino-labeled TEM-C^{14} was virtually the same as the values obtained in earlier studies with the triazine-labeled drug. Between 68.5 and 72.5 per cent of the injected radioactivity was excreted in the urine, twenty-four hours after drug administration. Four to 5 per cent of the injected radioactivity was excreted in the second twenty-four hours. Only a small percentage of the injected radioactivity was excreted in the feces.

Little can be said regarding the location of the radioactivity retained in mice administered ethylenimino-labeled TEM-C^{14} after forty-eight hours. The only detectable radioactivity found in the liver was in the tissue proteins.

Attempts were made to characterize the radioactive metabolites in the urine of administered ethylenimino-labeled TEM by paper chromatography. The urine was chromatographed using several solvent systems, and the resulting chromatograms showed a smear of radioactivity with practically no clear cut resolution of radioactivity. This indicated either that these systems were not capable of separating the urinary metabolites or that there were many of them present.

The urine was deproteinized with trichloroacetic acid to a final concentration of 10 per cent. Radioassay of the protein showed that no radioactivity was present in this fraction. Urea was precipitated as the xanthydrol derivative by the method of Fosse directly from the urine. Assay of the radioactivity in the urea derivative showed that only a minimal amount of radioactivity (0.37 per cent) was contained in the urea.

Subsequently attempts were made to isolate and identify the radioactive urinary metabolites by means of ion exchange chromatography. The results of the chromatogram showed that there were five major radioactive peaks in the eluant which accounted for 74 per cent of the total urinary radioactivity, the largest peak being 34 per cent. Eleven minor peaks also were detected. An almost identical chromatogram was obtained with the urine from another experiment.

One of the peaks eluted at pH 11 was extracted with ethyl ether and then chromatographed on paper. The R_f values in the two solvent systems used were almost identical to those of creatinine. It was shown that known creatinine was eluted from the ion exchange column at the same position off the column as the radioactive peak. Creatinine also was isolated directly from the radioactive urine by the method described by Bloch and Schoenheimer (1939). The percentage of radioactivity (14.9 per cent) found in this isolated creatinine corresponded approximately to that amount found in the radioactive peak from the column described above (13.4 per cent). An inverse isotope dilution was carried out on the isolated creatinine. The recrystallizations were found to have a constant specific activity, indicating that the radioactive material was identical to creatinine. All of the data point to the conclusion that this radioactive urinary metabolite is creatinine.

The principal radioactive peak (34 per cent of the total urinary activity) was precipitated by the addition of mercuric acetate within a narrow basic pH range. All of the radioactivity was found in the precipitate. This material gave a negative test with ninhydrin. After hydrolysis for three hours with 0.2 *N* sodium hydroxide, a positive ninhydrin test was obtained. Paper chromatographic analysis of the material showed that the R_f value had changed to 0.11 from a value of 0.61 of the original material. The data indicates that this compound is not a free amino acid since a negative ninhydrin test was obtained. The metabolite gives a positive test after treatment with sodium hydroxide, so it is possible that the compound is a conjugate of an amine or amino acid, such as an acetylated derivative. Further investigation is necessary in order to determine its exact nature. Employing similar procedures, attempts to identify the other urinary radioactive peaks have been, as yet, unsuccessful.

The radioactivity found in blood samples of mice and rats administered ethylenimino-labeled TEM-C^{14} intravenously indicated that the major portion of the radioactivity was removed from the blood stream within a few minutes after injection.

It was shown earlier that cyanuric acid was one hydrolytic product of TEM, and it was of interest to determine the nature of any others. TEM was hydrolyzed with 1 *N* sodium hydroxide for three hours and extracted with ether. The results of paper chromatographic analysis indicated that this compound was ethanolamine. The verification of

ethanolamine as one of the hydrolysis products of TEM was obtained by forming the picrate derivative of ethanolamine.

The possibility existed that the numerous radioactive peaks in the urine of administered ethylenimino-labeled TEM-C^{14} were due to the *in vivo* hydrolysis of TEM to ethanolamine and then further changes occurring with this moiety. To test this hypothesis, carbon-14 ethanolamine was administered to CAF, mice in a comparable molecular ratio. It was found that the urine contained 4.5 per cent of the injected radioactivity twenty-four hours after administration and 1 per cent in the second twenty-four hour period. Approximately 14 per cent of the injected radioactivity was exhaled as carbon dioxide in twenty-four hours. The urine was subjected to ion exchange chromatography, and a different picture was obtained when compared to the chromatogram of the urine of administered TEM-C^{14}.

The *in vitro* reaction of TEM with sixty compounds of biological importance was determined by noting the lethal effects produced in mice after injection of the mixture.

A comparison was made of the protective action of cysteine, cysteamine, and sodium nitrite against the lethal effects in mice of X-irradiation, nitrogen mustard, and triethylene melamine. Striking differences in the degree of protection obtained by the preadministration of the compounds were revealed. All of the compounds afforded some protection against the lethal effects of X-irradiation. Substantial protection against the lethality of nitrogen mustard was obtained with cysteine and some protection with cysteamine. None of the compounds gave measurable protection against the lethal effects of TEM.

Chemical interaction of HN_2 or TEM with cysteine and cysteamine was demonstrated by measuring the disappearance of sulfhydryl groups, loss of toxicity of the mixture when injected into mice, and by paper chromatography. The reaction of nitrogen mustard with cysteine or cysteamine required only minutes, while that between TEM and cysteine or cysteamine required several hours. It is suggested that this observation may explain the striking differences in the degree of protection afforded by the sulfhydryl-containing compounds.

Prolonged interaction of TEM with cysteine resulted in a new compound. This compound was isolated by repeated recrystallizations from ethanol, characterized by paper chromatography and elemental analysis. The probable structure of the reaction product is suggested. The new compound was found to be non-toxic after administration of massive doses to mice. No increase in survival time was observed after administration of the compound to mice bearing inoculations of Leukemia 1210.

A STUDY OF THE FUNCTION OF THE VERBAL PREFIX *GE-* IN THE LINDISFARNE GOSPEL OF SAINT MATTHEW

by HENRY PEARSON HOPPER*

This dissertation presents a thorough study of the use of the verbal prefix *ge-* in the Old English texts appearing in the Skeat edition of 1887 of the Gospel of St. Matthew in relation to the tenses of the Latin texts in the same source and to the governing verbs of Old English infinitives, to certain other morphological and syntactical relations, and especially to the aspect as indicated by the context. A limited examination of the relation of the prefix to lexical factors is made in connection with the discussion of the findings of the complete studies just mentioned.

I

Résumés of the views presented in various works on the aspects in Indo-European and Germanic in general and in various Germanic languages other than Old English are given as representing the various classifications and definitions accepted in previous studies. It is pointed out that certain categories included in some of these classifications are not germane to the problem of aspect as conceived in the present dissertation: (1) The "perfectic" category is characterized by relative time, which is alien to the nature of aspect. (2) The "resultative", both in the definition as expressing the attainment of a result through the action of the simplex and in the more extended definition (with synonyms *terminate* and *terminative*) as expressing anticipated completion, etc., is a purely lexical category that may be used either as imperfective or perfective and cannot, therefore, be something different from these as is generally assumed. (3) The *inchoative, iterative,* and *frequentative* are also lexical categories, although frequently also derivational classes and although the last two of these have aspectual function in Slavic, forming imperfectives from perfective simplices and from compounds whose prefix has lexical meaning. This latter function of iterative and frequentative is explained by the writer as deriving from original variation of the semantic value of these formations between actual repetition and mere persistence (as in the case of the parallel formations in Latin and Sanskrit and equivalent periphrastic constructions in modern English), the latter value obviously lending itself to the use in question.

The last-mentioned point regarding the iterative and frequentative

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appears in a survey of the classification and functions of syntactical aspect in the Slavic languages, in which two other important points appear. First, choice of aspect is not wholly determined by the most obvious contextual factors, but is determined by how the action is conceived by the speaker. Second, the assumption by many authors that the future tense is necessarily perfective is probably due to noting that the formal present of perfective verbs in Slavic has future sense (which is not strictly true in all cases) and ignoring the fact that all these languages have a means of forming the future tense of imperfective forms too, which is fully equivalent in tense value although not in form (except South Slavic).

The aspects accepted by the writer are two: *imperfective*, expressing the action of the verb as *undelimited*, whether this action constitutes a logical continuum or a succession of acts conceived as a continuum (i.e., an *action* in the main acceptation of this word or a *situation*), and *perfective*, expressing the action of the verb as *delimited* (i.e., as an *act* or *event*). The terms *ingressive*, *effective*, *durative-perfective*, and *punctual* are accepted as indicating special modes of delimitation, determined by lexical value and context.

In connection with his résumé of one of the works referred to above, the writer points out that only the first half of the claim that in modern English the progressive forms are imperfective and the simple tense forms are perfective is correct, since the latter may also be imperfective and especially since both forms of the present tense are normally imperfective, the difference between them being on the whole that the progressive expresses something *specific*, the simple tense something *general*. Accordingly, while English has an aspect system of a sort, it is not complete, and to such extent as use of a given form is obligatory, this is usually determined by quite different factors from those effective in Slavic or Greek.

Résumés of papers dealing with the use of *ge-* in Old English show general acceptance of the existence of the principal of aspect in this language and of the conformity of the use of the prefix in the texts examined to this principle.

II

The first analytical portion of the dissertation gives tabular analyses of the relation of *ge*-compound and simplex in the present and preterite indicative of all Old English verbs occurring in the texts examined (omitting denominatives and verbs not occurring with *ge-*) to the tense of the Latin lemmata and of the relation of *ge-* in Old English infinitives to their governing verbs. The use of the prefix in relation to Latin tenses is shown to have a slight but not conclusive trend toward the

traditional notions, but the writer points out that only the Latin present and imperfect and, to a less extent, the future perfect and pluperfect have definite aspect value. The significance of this value is reduced in the case of the present by the evidence of Slavic usage with respect to historical and gnomic presents (which are in the majority in these texts), and in the case of all of these tenses by the lack of assurance that a translator would in all cases adhere to the aspect of the original. This is demonstrated by the many cases of change of tense in these texts and in other versions of this Gospel and by the fact that a collation of the instances of lemmata in the imperfect tense in the material treated with four Slavic versions, representing three languages, shows an overall aspect conformity of only 77 per cent and simultaneous conformity of all four texts in only 56 per cent of the instances. The figures on the infinitive show some trend toward the traditional view in the case of *magan* and *sculan* for the Lindisfarne text only, but the writer demonstrates that these verbs do not *require* any particular aspect, whereas *onginnan* does require the imperfective, yet four out of eleven infinitives depending on this verb in Lindisfarne have the prefix *ge-*.

III

The second analytical portion gives an analysis of the syntactical functions of the prefix *ge-* as indicated by the context, treating all grammatical forms of the Old English, a total of 10,645 instances for the four texts together, even though the same omissions are made as before. Tabulations—arranged in twenty-four verb groupings—are accompanied by discussions of examples selected both from typical and problematical instances. The tabulations and discussions are prefaced by an exposition of some interpretative principles derived from the process of analysis and from the work of the various authors consulted.

Two of these principles are particularly important. The first is the observation that in all languages known to the writer there exists what may be called ***lexical aspect***, which is purely lexical in nature, as the term implies, but closely approximates ***syntactical aspect*** (the feature designated when we speak of "aspect" in Slavic and with which we are concerned in this dissertation) in semantic content. In addition to being an invariable lexical attribute, the former differs from the latter in that it exists in degrees, ranging from a complete absence of aspect implication (*write*) to a definite semantic relation to one of the syntactical aspects (perfective, *die;* imperfective, *live*). Contrary to the assumption of most authors known to the writer who have some notion of this distinction (all of whom recognize only perfective and imperfective types—save one who recognizes only perfective and indifferent—without gradation), verbs of any lexical aspect type may be construed in either syn-

tactical aspect. In such case a given lexical aspect gives a special sense in the contrary syntactical aspect, e.g., syntactically imperfective use of a lexical perfective may have iterative sense ("many are dying every day"), for instance, or perfective construction of a lexical imperfective may have effective sense ("he will not live out the day").

The above distinction corresponds to that between "Aspekt" and "Aktionsart" adopted by numerous authors, but these terms are not self-explanatory and are rarely well explained. Also, I have found no mention anywhere of the gradation in lexical aspect pointed out above and only one author who realized the extent of the independence of the two types.

The second main principle brought out is that—as has been pointed out by A. Mirowicz—contextual indications for the aspect of a given instance are not necessarily clear-cut; they may vary in strength, and conflicting indications may be simultaneously present. Accordingly the writer in his tabulations has classified the instances into five arbitrary—since a continuous graduation is involved—classes according to the contextual indications as positively perfective or imperfective, probably perfective or imperfective, or indeterminate. In further development of this point, a discussion is given of types of contextual indications considered to require one or the other syntactical aspect nearly positively when clearly present. The discussion of these "criteria" (derived from Mirowicz with considerable modifications) for contextual analysis is supplemented by a discussion of "gnomic" utterances, in which it is suggested that the well known fluctuation of the aspect of such utterances in Slavic and Greek is due to the fact that all such have as one contextual indication that of "customary action". They thus express something conceived as having a continuity embracing past, present, and future, which calls for the imperfective aspect, but this indication is often accompanied by perfective indications, especially in proverbs (which express things that *may*—or *never do*—happen *at any time*), in which case the aspect used will depend on which indications the speaker chooses to emphasize.

Little difference is found among the twenty-three lexical groups of verbs in the use of the prefix, although there is considerable variation in its frequency with different individual verbs. The "perfective simplices", however, show only about half the percentage of *ge*-compound instances found for the whole material, yet this is higher than we should expect according to the traditional view. Moreover, from 9.2 per cent to 10.1 per cent of the total number of instances of this group in the various texts are positively imperfective (against 13.2 per cent to 14.5 per cent for all verbs). Placing this group in relation to the principle of lexical aspect, it may be stated that all of these have more or less perfective tendency, but while this is strong in *findan*, for instance, it is but slight in,

e.g., *secgan*, imperfective instances of the latter including some that express true continuation. *Cuman* and *findan* have *ge-* only in the Lindisfarne text, except for one instance of the former in the West-Saxon texts, but *findan* does not present a large number of instances—similar observations can be made regarding verbs not considered "perfective simplices", however. *Mētan*, on the other hand, appears almost exclusively with *ge-*, which appears to be lexically determined, since it means 'find' throughout. It is noteworthy that all the numerous instances of *weoroan* as past participle have the prefix, and that there are a number of instances of other grammatical forms of this verb with this prefix in all texts.

Graphs are presented showing the total number of instances for each text and the number of *ge*-compound instances in each of the five classes of aspect indications already mentioned, the percentage of compound instances in each class for the entire material, and the percentage of compound instances with the "perfective simplices" excluded. The percentage graphs are furnished also with a line representing theoretical perfect correlation of the use of the prefix with aspect on the basis that 100 per cent compound would be expected in the "positively perfective" class, and so on: in both graphs, the distribution curves show a slope and position about half-way between the ideal curve and the horizontal, with a deficiency of compound instances in the positively perfective category (compound 30.1 per cent to 49 per cent with "perfective simplices", 45.1 per cent to 69.7 per cent without) and an excess in the positively imperfective category (10.9 per cent to 19.1 per cent compound with and 14.2 per cent to 23.2 per cent without "perfective simplices").

An analysis is also made of the use with verbs of motion of the "place where" and "place to which" adverbial constructions, which is found not to demonstrate a relation either to the prefix *ge-* or to aspect. Separate analyses are given for all the verb groupings used on the relation of the prefix to aspect in present participle, past participle, imperative, infinitive, and governing verb of a dependent infinitive. These analyses show the use of the prefix in the infinitive to be about the same as for all forms in a given text, in the past participle to be much higher, and in the other three constructions to be lower than for all forms taken together. The aspect analysis shows that these deviations are not determined by aspect. It is also noted that while it has been generally recognized that the past participle may be either perfective or imperfective, it has not been noted that the same is true of the present participle, which may be used perfectively as a "past active participle" or as equivalent to a coordinate preterite (true for Old English, modern English, Vulgate, all eras of High German [Behaghel]).

The data indicated above concerning the relation of the use of *ge-* in

these texts to aspect show the usage as expressed by the curves in the graphs to be about half-way between the line of ideal correlation and the horizontal. As the latter represents uniform distribution without regard to aspect, it cannot be said either that there is no relation to aspect or that there is a clear-cut correlation of the use of the prefix with aspect. There are three possible explanations: a selective principle may be involved, the deviation may be due to deterioration of the feeling for aspect, or the significance of the prefix may be lexical and not aspectual.

The notion of a selective principal can be eliminated at once by pointing out that while such a thing exists in Slavic, Latin, and modern English to a certain extent, it is strictly on an aspectual basis in the first named and in all three at least one aspect is always identifiable, whereas in these Old English texts there is nothing to indicate that the use of the prefix *ge-* is restricted to perfective aspect or that the exceptions are restricted to obvious lexical instances. Furthermore there is no trace of any means of indicating whichever aspect may be considered to be required for verbs to which the prefix clearly gives a distinct meaning. To speak of a selective principle under such circumstances is a *petitio principii*, since in combination with the situation just mentioned it is equivalent to no genuine system whatever.

The deterioration idea cannot be dealt with directly on the basis of the material examined here, but the lack of certainty of either aspect referred to above, so far as the writer knows, goes back to the earliest period of Old English at least. It is only reasonable to assume that had there been a genuine syntactical aspect system, the existing Indo-European and Germanic iterative formations would have been developed as in Slavic, or some other means have been found to keep at least one aspect distinct.

Accordingly, the writer considers that the explanation for both the deviation and the partial correlation of the use of the prefix *ge-* has a lexical basis. It is considered that just as simplex verbs have lexical aspect tendencies, so do prefixes, and that the majority of prefixes have more or less tendency toward perfective lexical aspect (although none of them to a high degree in all compounds). Therefore, just as a verb of perfective lexical tendency is more likely to appear in perfective contexts, so the addition of a prefix such as *ge-* to a verb of any lexical aspect will in most cases increase the likelihood of the occurrence of this verb in perfective contexts. In connection with this point, a discussion of the relation of the *ge*-compounds of a number of verbs to lexical factors, chiefly on the basis of the Latin lemmata, are given, in which a closer relation to the lexical element than to aspect is shown.

It is believed therefore that, with the exception of the prevalence of the prefix in the past participle, the significance of which as an argu-

ment for an aspectual interpretation of *ge-* is considerably reduced by the disparity in the treatment of the participles of *cuman* and *findan* as against *cweoan* and *weoroan* (apparently from the earliest times in Old English), which points to the individual verb as the determining factor and is therefore more amenable to a lexical than a syntactical explanation, all phenomena revealed in this study are best explained on the assumption of lexical value of the prefix under consideration.

STUDIES ON SOME BLOOD COAGULATION FACTORS IN A SELECTED GROUP OF MAMMALS

by GEORGE JOSEPH JACOBS *

An understanding of the mechanism responsible for the initiation of clotting has been clarified by many experimental findings of the last twenty years. However, certain phases of the study of blood clotting have been neglected. The existence, concentration, and significance of the various clotting factors have not been determined in most animals. Also, the question of the species specificity (relative activity) of clotting factors has been ignored. The present study was undertaken in an attempt to determine the concentration, species specificity, and intragroup relationships of some of the factors in a group of mammals.

A concept of the reactions responsible for blood coagulation based on Morawitz's theory consists of two phases as follows:

FIRST PHASE:

Thrombogen (prothrombin) + Calcium^{++} + Thromboplastin ➔ Thrombin

SECOND PHASE:

Thrombin + Fibrinogen ➔ Fibrin

Prothrombin is a normal constituent of blood plasma. According to Morawitz's theory it is the precursor of thrombin, into which it is converted in the presence of plasma calcium ions and thromboplastin. Thromboplastin occurs in various tissues. Thrombin is considered to act enzymatically causing the fibrinogen to convert to fibrin, the clot. There is very little controversy as to this reaction. However, the question of the formation of thrombin is still undecided; the main problem involves plasma thromboplastin generation and the reaction by which prothrombin is converted to thrombin.

Recent investigations have brought to light factors other than those of Morawitz's theory which are necessary for the efficient conversion of prothrombin to thrombin. Many of these factors have the same physiological and chemical characteristics and thus are similar; they can be identified as either of two factors according to their properties. One factor is:

1. Very labile when in storage
2. Not adsorbable on aluminum hydroxide, calcium sulphate, calcium carbonate, Seitz and asbestos filters, and other adsorbants
3. Not diminished by dicumarol therapy
4. Not responsive to vitamin K therapy

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5. Found in plasma in much greater concentration than in serum
6. Not heat resistant (above 56° C.)

The other factor is:

1. Very stable when in storage
2. Adsorbable on aluminum hydroxide, calcium sulphate, calcium carbonate, Seitz and asbestos filters, and other adsorbants.
3. Diminished by dicumarol therapy
4. Responsive to vitamin K therapy
5. Found in serum—but perhaps also in plasma in precursor form
6. Very heat resistant (even above 56° C.)

The factor having the first set of characteristics, the labile factor, exists as an inactive precursor in plasma, being converted to its active state by thrombin. In its active state this factor then aids in the conversion of prothrombin, in the presence of thromboplastin and calcium, to thrombin at an accelerated rate. Ac-globulin is used in this dissertation to designate this factor.

The factor having the second set of characteristics, the stable factor, has been reported to exist in a precursor form in plasma, but no definite conclusions on this matter have as yet been reached. This factor, too, aids in the conversion of prothrombin to thrombin. SPCA (serum prothrombin conversion accelerator) is used in this dissertation to designate this factor.

There are also other factors of importance in the coagulation mechanism. These are AHG (antihemophilic globulin), PTC (plasma thromboplastin component), PTA (plasma thromboplastin antecedent), and the blood platelets. They are apparently necessary for the normal formation of plasma thromboplastin, a deficiency of any of them causing hemorrhagic manifestations.

If one were to draw a generalized diagram amending Morawitz's theory and including the new factors, it might appear as follows:

INITIATION:

Plasma thromboplastin is generated by the interaction of platelets, AHG, PTC, PTA, and ionic calcium.

FIRST PHASE:

$$\text{Prothrombin} \xrightarrow[\text{Thromboplastin, } Ca^{++}\text{, accelerator}]{\text{Platelet}} \text{Thrombin}$$

$$\text{Plasma Ac-globulin} \xrightarrow{\text{Thrombin}} \text{Serum Ac-globulin}$$

$$\text{Prothrombin} \xrightarrow[\text{Thromboplastin, Platelet accelerator}]{\text{Serum Ac-globulin, SPCA, } Ca^{++}} \text{Thrombin}$$

SECOND PHASE:

$$\text{Fibrinogen} \xrightarrow{\text{Thrombin}} \text{Fibrin}$$

Initially the formation of thrombin proceeds slowly. Then inactive plasma Ac-globulin is stimulated by the thrombin to convert to active serum Ac-globulin, which, with SPCA, calcium ions, thromboplastin, and platelet accelerator causes the remaining prothrombin to convert to thrombin at a faster rate.

Some studies of coagulation factors have been conducted using animals other than man, but the results have been confusing, partly because species specificity (relative activity) of the factors has been largely ignored. Thromboplastin and fibrinogen from one animal have been used to determine the coagulation factors of other species of animals, despite the fact that most observers agree that thromboplastin and fibrinogen are species specific.

This study, using a series of mammals, was conducted to determine the species specificity, concentration, and intragroup relationships of some of the blood coagulation factors. The following eleven different mammals were used: opossum, hamster, white mouse, white rat, guinea pig, domestic rabbit, cattle, raccoon, dog, cat, and man. The studies performed on these animals consisted of determination of the whole blood clotting time, the prothrombin time, the prothrombin concentration, the Ac-globulin activity, and the serum prothrombin conversion accelerator activity.

The whole blood clotting times were obtained by a modification of the Lee-White method. One milliliter of whole blood was added to each of three test tubes. The test tubes had been previously immersed in a 37° C. water bath. Immediately upon receiving the blood the tubes were reimmersed in the water bath. At various time intervals the test tubes were raised out of the water bath and tilted to observe if the blood was still fluid or had clotted. The end point was that time at which a tube could be completely inverted without any flow of fluid. The whole blood clotting times of the animals studied are as follows: ten mice averaging 1.7 minutes have a range of 1.3 to 2.0 minutes; ten rats averaging 2.0 minutes have a range of 1.7 to 2.5 minutes; eleven cats averaging 6.7 minutes have a range of 5.4 to 9.5 minutes; twelve guinea pigs averaging 7.1 minutes have a range of 1.8 to 10.0 minutes; one raccoon has a clotting time of 8.1 minutes; eighteen rabbits averaging 9.1 minutes have a range of 5.0 to 16.8 minutes; thirteen opossums averaging 13.9 minutes have a range of 5.5 to 30.0 minutes; fifty-five dogs averaging 15.9 minutes have a range of 10.8 to 25.5 minutes; sixteen men averaging 17.7 minutes have a range of 12.5 to 30.5 minutes; eight cows averaging 23.1 minutes have a range of 15.0 to 28.6 minutes. The data show that the smaller

mammals have faster whole blood clotting times whereas the larger mammals have slower whole blood clotting times. This may be accounted for by the methods used in bleeding the smaller mammals since there may be a larger amount of tissue thromboplastin introduced into the blood. The higher metabolic rate of smaller mammals may also play a part, since other investigations have shown that as the metabolic rate slows down in hibernation the blood coagulation time increases. Although the whole blood clotting studies are not indicative of the concentration of any particular blood coagulation factor, they present the normal range of clotting as a basis for comparing the abnormal with the normal.

Prothrombin times were estimated by a modification of the one-stage method of Quick, in which an excess of tissue thromboplastin and an optimum amount of calcium are added to citrated plasma and the clotting time recorded. The thromboplastin used was prepared from lung tissue. The lungs were dissected free of fat, fascia, and larger vessels, washed, and ground up. The finely ground-up tissue was mixed with approximately an equal volume of cold isotonic saline. This tissue homogenate was placed in a refrigerator at 6° C. for twenty-four hours, then strained through gauze, and centrifuged at 2,000 rpm for twenty minutes. The supernatant was used as the source of thromboplastin. One part of this thromboplastin and one part of citrated plasma were incubated at 37° C. for one minute. Then one part of calcium chloride (0.025 M) was added, and the clotting time recorded. The first sign of fibrin gelation was considered the end point. Prothrombin time determinations were made with thromboplastin from each of eleven mammals on each of ten different plasmas. The results show that the plasma prothrombin times are dependent upon the specific thromboplastin used. Thus the clotting times of the dog, rabbit, cat, raccoon, and man are shortest when rabbit thromboplastin is used; and the clotting times of the mouse, rat, cow, and guinea pig are shortest when bovine thromboplastin is used. The opossum plasma is activated fastest by homologous thromboplastin. Species specificity of thromboplastin shows up in these results. The prothrombin times are either within the fastest time range when homologous thromboplastin is used or within a few seconds of this range. With the human plasma only the cat and rabbit thromboplastin act faster than human thromboplastin, but these two are very potent thromboplastins. Human thromboplastin does, therefore, show some specificity.

Certain of the thromboplastins are more active than others. Similarly, certain of the plasmas clot faster than others. These facts must be evaluated when one determines species specificity. The following is an arrangement of the thromboplastins according to their clot accelerating activity, the fastest clotting first: rabbit, bovine, cat, human, raccoon, dog, mouse, opossum, rat, guinea pig, and hamster. The plasmas arranged according to their speed of clotting, the fastest clotting plasmas first, are

as follows: dog, rabbit, mouse, raccoon, rat, cat, opossum, human, bovine, and guinea pig. These two groupings do not parallel each other at all, except in the case of the rabbit and guinea pig. Thus, there does not appear to be any strong intragroup relationship among the animals as determined by thromboplastin activity or by the plasma ability to clot. The smaller animals appear to have less active thromboplastin. Their plasmas, however, do not fall into any group according to ability to clot.

Estimation of the prothrombin concentration of each animal was made by the modified two-stage technique of Ware and Seegers. Decalcified citrated plasma was clotted by adding thrombin and then was allowed to stand at room temperature until antithrombin inactivated the added thrombin. An excess of thromboplastin and an optimum amount of calcium were added to the defibrinated plasma, and thrombin was thus generated. Aliquots of this generating thrombin solution were added at definite time intervals to a solution of fibrinogen and the clotting time recorded. Prothrombin concentration was calculated from the clotting time according to the procedure of Ware and Seegers. Since, in this technique, thrombin generation is not dependent upon any specific thromboplastin, a commercial preparation was used consisting of a lyophilized mixture of thromboplastin, acacia, calcium chloride, and an imidazole buffer. The fibrinogen used was prepared from citrated plasma by the following method. The plasma was treated with barium sulphate (which adsorbs prothrombin and SPCA) in order to minimize the possibility of clotting. To the barium sulphate plasma was added one-third of its volume of a saturated ammonium sulphate solution. A precipitate was formed, the solution centrifuged, and the precipitate redissolved in distilled water equal in amount to the original plasma volume. Three such precipitations were done. The solution was then dialyzed for thirty-six hours against a sodium citrate solution. The final solution was lyophilized and stored at minus 10° to minus 20° C. until used.

Ten different fibrinogens were used with each of ten different plasmas in turn and the prothrombin concentrations determined. The results of this experiment show that prothrombin concentration is dependent upon the specific fibrinogen used. In general, the highest yield of prothrombin is found where homologous fibrinogen and plasma are used. However, certain of the animals consistently have a higher level of prothrombin regardless of the fibrinogen. Thus, the rat, cat, and man have consistently high levels followed in descending order by the guinea pig, rabbit, dog, cow, raccoon, and the mouse and the opossum which have consistently low levels.

No intragroup relationship exists in so far as prothrombin concentration is concerned. It is noteworthy, however, that the rodents possess fibrinogen that is not easily converted to fibrin by most thrombins. If the animals are examined as to prothrombin concentration when homo-

logous factors are used, then again the rodents (and the opossum) show the smallest quantity. However, when the other animals are grouped, the cat is the highest, followed by the dog, man, rabbit, cow, and raccoon; no intragroup relationship appears to exist.

The opossum presented peculiarities not seen in other forms. It was necessary to use very strong commercial bovine thrombin solutions to clot the opossum plasma, thus it is not surprising that the thrombin generated by any of the animals, including the opossum itself, could not clot the opossum fibrinogen within the time limit necessary for even a minimal amount of prothrombin to be calculated. Opossum thrombin clots other mammalian fibrinogens, but other mammalian thrombins do not readily clot opossum fibrinogen. Thrombin generation is unusually prolonged in the opossum plasma under the conditions of the two-stage test. This may be due to a complete lack of antithrombin or a weak-acting antithrombin.

Estimation of the Ac-globulin activity of each mammal was done by a modification of Owren's proaccelerin one-stage method in which an optimum amount of calcium chloride is added to a solution containing a known amount of prothrombin, thromboplastin, fibrinogen, and diluted plasma, and the clotting time recorded. The theory behind this method is that prothrombin conversion to thrombin in the presence of an excess of tissue thromboplastin and an optimum calcium is dependent upon the amount of Ac-globulin present. Instead of purified prothrombin, an Ac-globulin-free plasma was used. This plasma was prepared by adsorbing the Ac-globulin on a carboxylic acid cation exchange resin. The thromboplastin used was from bovine lung prepared as described above. The fibrinogen solution was prepared from bovine Fraction I. Diluted plasma of each of nine species was tested not only with homologous prothrombin preparation, but also with all other heterologous prothrombin preparations. The results of this experiment show that some animals have either quantitatively more Ac-globulin or a more potent Ac-globulin. Some observers have shown that bovine Ac-globulin possesses more activity than guinea pig Ac-globulin. An examination of the data reveals that bovine Ac-globulin possesses more activity than guinea pig Ac-globulin only when bovine, human, or cat prothrombin is used, but guinea pig Ac-globulin possesses more activity than bovine Ac-globulin when guinea pig, mouse, or opossum prothrombin is used. This trend is observed throughout the results. Thus, Ac-globulin activity is dependent upon the specific prothrombin acted upon. However, disregarding the prothrombin used, the animals beginning with the one having the most active Ac-globulin, can be listed as follows: rabbit, dog, mouse, cat, guinea pig, rat, cow, opossum, and man. In this arrangement there does not appear to be any intragroup relationship.

Estimation of SPCA (serum prothrombin conversion accelerator)

activity for each species of mammal was made by the method of de Vries, Alexander, and Goldstein. In this test the enhancement of plasma prothrombin time by serum is taken as a criterion of SPCA activity. By means of Quick's one-stage test, separate determinations are made of the prothrombin time of plasma, serum, and a 1:1 mixture of plasma and serum. The difference between the 1:1 plasma-serum mixture prothrombin time and an average of the individual plasma and serum prothrombin times shows the amount of enhancement given the plasma prothrombin time by the added serum. From these results the concentration of SPCA activity can be recorded. Activity was measured in ten different animals using homologous lung thromboplastin, plasma, serum, and plasma diluent. The results show that the SPCA activity of the animals studied is as follows (in per cent enhancement): mouse, 104; human, 95; opossum, 93; raccoon, 89; bovine, 81; dog, 54; cat, 25; rat, 19; guinea pig, 14; and rabbit, 14.

There are very few references in the literature to the activity of serum prothrombin conversion accelerator in animals other than man. De Nicola compared the activity of this factor in a series of animals. In de Nicola's investigation heterologous reagents were used (except for one species). Therefore no comparison can be made between the results of his work and the results presented here. No attempt was made during the present study to determine the species specificity or the intragroup relationship of this factor. The values given are presented as normal values, under the conditions of the technique used.

When all the factors studied are listed according to activity no general scheme is apparent. However, there appears to be a rough correlation between the prothrombin time and the Ac-globulin activity, since the rabbit, dog, and mouse head both lists. This may indicate that prothrombin time is very dependent on Ac-globulin content, or it may be due to methodology, since the techniques used to show both are very similar. However, one must also consider the findings of the SPCA test which does not correlate with Ac-globulin and prothrombin time tests although they are all conducted similarly.

If one averages all of the values in the case of prothrombin level, Ac-globulin, and SPCA activity, the cat plasma shows the highest concentration of these coagulation factors and is followed in turn by the mouse, dog, human, rabbit, rat, raccoon, guinea pig, bovine, and last, opossum. There does not appear to be any intragroup relationship in this arrangement.

SUPPLEMENTAL CREDIT AS AN INSTRUMENT OF POSTWAR AGRICULTURAL POLICY

by ALMON TURLEY MACE*

This dissertation attempts to appraise the effectiveness of supplemental credit as an instrument of postwar agricultural policy.

The term supplemental credit as used here is credit extended or insured by the government for the purpose of improving income and promoting better use of manpower and land resources by family-type farm operators who are unable to obtain credit needed for this purpose from private or cooperative credit sources.

The methods used in the analysis are, first, to examine the orientation of supplemental credit within the postwar policy structure of American agriculture and, second, to appraise the operation of the supplemental credit program in relation to the policy objectives which have resulted in its existence.

POSTWAR ECONOMIC POLICIES

The supplemental-credit program objective of aiding family-type farmers to increase their income through more efficient utilization of resources is consistent with national economic policies pertaining to increased welfare advantage for many of the lower-income groups in the national economy. The implied income distribution benefits of the supplemental credit program are in accord with minimum wage legislation, old age pensions, dependent children assistance, unemployment insurance, blind assistance, and slum clearance. Meanwhile the supplemental-credit objective of more efficient utilization of resources is related to the over-all objectives of economic growth and resource development.

Although agricultural policy has long been concerned with the income of farmers, the emphasis has been primarily on the relationship of farm income to the income of other sectors of the economy. Active policies relating to income distribution were first developed in the 1930's.

Functionally the agricultural policies of the postwar period can be classified into those dealing with the development of the agricultural economy, those pertaining to the reallocation of the structure of output, and those relating to income distribution problems. Policies grouped within these three classifications overlap in some instances, and those affecting income distribution have definite implications both in reallocation of the structure of output and in agricultural development.

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Development Policies

One of the most important agricultural development policies has been the research program, first formalized by the establishment of the Land-Grant Colleges in 1862. Policies in the postwar period have provided for the continuation and expansion of this research. New and more productive varieties of crops and strains of livestock continue to appear, and further efficiencies through labor-saving machinery and improved farm-management techniques are introduced each year.

Youth and adult-education programs have served as important corollaries to the research program. Youth and adult-education policies also date back to the Civil War and have been applied with increasing emphasis and success during each decade following their inauguration. Adult education or guidance is a part of the supplemental credit program and is a major element in postwar conservation and resource development activities.

One of the most widely accepted postwar agricultural development policies is conservation. Advice and assistance in soil conservation is available to all farmers through the soil conservation program of the Department of Agriculture. The best work, however, is being done in areas where the farmers have banded themselves together to form soil-conservation districts. In such areas all cooperating farmers are given technical service in developing long-time soil-conservation programs which will best fit the individual farm.

Some of the other development policies of the postwar period include those relating to forest preservation and utilization, development of public utilities in rural areas, and the work on upstream waterways to provide adequate water supply in times of drought and at the same time aid in preventing disastrous floods.

Policies on the Reallocation of the Structure of Output

Postwar policies pertaining to the reallocation of the structure of output have been, for the most part, short-run policies concerned with price, production, and market stability. Attention has been given to longer-run policies such as the shifting of the production of certain crops toward areas where their production can be carried out most advantageously, but in the main, these longer-run policies have not been implemented. Instead, shifts of production have been left largely to the desires of producers as affected by changing demand and comparative costs of production.

Price support has been one of the most widely discussed policies in the postwar period. Although government stock of agricultural commodities has tended to accumulate, the program has been effective in

supporting prices for most products. Price support programs with the accompanying acreage controls on crop production have a direct effect in reallocation of the structure of output.

To assist in providing demand stability as the war and postwar needs for agricultural products have decreased, emphasis has been placed on the creation of longer-time foreign markets and on the development of new domestic markets and improved marketing processes. To aid in the development of domestic markets and stimulate the improvement of marketing processes a marketing research act was passed by the Congress in 1946, and to assist in the work with longer-term foreign markets, the Foreign Agricultural Service under the direction of an Assistant Secretary was created in the Department of Agriculture in 1953.

Income Distribution Policies

Policies pertaining to the distribution of income employ several instruments of agricultural policy including research, education, conservation, and price control, but the instrument most directly concerned with income distribution in agriculture in the postwar period has been supplemental credit.

Despite the technological development within agriculture in the past few decades and notwithstanding the policies designed to produce price and market stability, a wide disparity of income remains among farm families. Income distribution policies are designed to remedy this situation. Although many of the lower-income farm people are on tracts of land that cannot be developed into adequate farms, many others have low incomes and are farming inefficiently because of lack of capital resources and failure to employ the best technical skills. Postwar income distribution policies have been directed primarily to the latter group.

STRUCTURE OF AGRICULTURAL INCOME

Comparison of agricultural income with that from other occupations indicates that even when allowance is made for the value of food and fuel produced on the farm and used in the home and for the rental value of the dwelling, the average farm income lags behind the self-employed, the managerial, and the professional and semi-professional groups and is only slightly higher than that of those groups which receive their incomes from labor alone. Thus the farmer receives little more than an average labor income despite his substantial capital investment.

Within agriculture it is found that in 1950 the 43.2 per cent of the commercial farms with value of products sold between $2,500 and $10,000 accounted for 38.0 per cent of the total value of farm products

sold by commercial farms. Meanwhile, the 43.7 per cent of the commercial farms with value of products sold of less than $2,500 had slightly less than 10 per cent of the total sales. At the other end of the income stratification, the 13.1 per cent of the farms with value of sales of more than $10,000 had 52.1 per cent of the total.

Despite the differences in value of products sold per farm and in the proportion of total products produced by the various income groups, the sales per acre differ only slightly between the groups with value of products sold of more than $5,000. The lesser receipts per acre for farms with sales below this figure tends to illustrate the decreased efficiency of the lower-income groups.

The Low-Income Problem

Although some indication of the extent of low income in agriculture is given by these value-of-sales stratification figures, the number of low-income farmers is more clearly portrayed by the studies of the Joint Committee on the Economic Report, 82d Congress, 1st Session and by the 1955 Department of Agriculture Bulletin entitled *Development of Agriculture's Human Resources*. From these studies it can be concluded that at least two million farm families are receiving very low income. Many of these do not have adequate land resources.

Although some movement of industry into the labor-surplus low-income agricultural areas has occurred, no definite concerted-action program has been developed for these farmers who cannot obtain adequate land resources. With regard to assistance in establishing efficient farming operations on family-type farms with sufficient land for full-scale farming, a number of instruments have been used, but the supplemental-credit program has been most directly concerned with the problem. The supplemental-credit program, however, has not been limited to farmers with income near the poverty level. Instead, any family-type operator who cannot borrow from regular private or cooperative lending institutions the capital needed for development of efficient farming has been eligible for assistance.

Supplemental Credit

Federal policies for supplying credit in addition to that normally available from private banks and other lending institutions began with the Federal Farm Loan Act of 1916. Although loans made in accordance with this legislation and its subsequent changes have been well received by farmers, the loaning policies have tended to become established with standards similar to those used by commercial banks.

The basic type of supplemental credit now offered by the Farmers Home Administration was begun during the depression of the 1930's as a type of self-help relief with grants or combination loans and grants for means of growing subsistence produce. The present concept of making loans combined with management guidance to establish efficient and effective farming operations grew out of this idea of self-help for impoverished families.

The Farmers Home Administration is the United States Department of Agriculture agency which now handles the supplemental credit program. This agency was formed in 1946 through the combination of the Farm Security Administration and the Emergency Crop and Feed Loan Division of the Farm Credit Administration.

During the postwar period four general areas of assistance have been provided to farmers unable to borrow from private and cooperative institutions the credit needed for increased income and better use of land and manpower resources. They are as follows:

1. Loans accompanied by management assistance—known as adjustment loans—have been supplied to farmers lacking the capital or the availability of credit to make needed changes in their farming operations. Two types of situations are involved. In one situation the farmer is operating inefficiently because of insufficient capital and failure to use good farm management practices. In instances of this kind loans for the needed capital expenditures are provided and assistance is given in starting efficient farm business enterprises and in establishing and carrying out efficient farm management practices. In another type of situation the farmer is carrying on farming operations which are no longer profitable because of shifts in marketing opportunities, because of changes in comparative advantage in the geographic areas of production, or because competition has eliminated the margin of profit which once existed. In instances of this type loans are provided to finance more profitable enterprises, and management assistance is given in selecting the enterprises and in getting them established on the farms so that they result in efficient production.

2. Adjustment loans have been supplied to families beginning as farm operators. These loans, accompanied by management assistance, are intended to prevent the inefficient, unproductive farming which often results from farmers attempting to begin operation with insufficient capital. Particular attention is given to helping the beginning farmers use the credit to initiate farm enterprises which will fit the capabilities of the land and be compatible with the marketing opportunities. Special attention is also given to aiding in the adoption and use of the most efficient farm practices.

3. Credit and management assistance have been given to farmers in the purchase, enlargement, or development of efficient family-type farms.

Two situations are involved with this type of assistance which is known as the farm ownership loan. In the first instance the farmer is not an owner but desires to purchase a family-type unit. If credit for the purchase of the unit is not otherwise available the farmer is eligible to receive a long-term loan to purchase the farm, provided the farm gives evidence of sufficient earning capacity to assure repayment. In the second instance the farmer already owns some land but his unit is too small or too poorly developed for efficient farming operations. In instances of this kind loans accompanied by management assistance are provided either for the purchase of additional land or for the development of the farm in order that its resources may provide the means for an efficient farming unit.

3. Loans have been made to farmers temporarily in financial difficulties because of disaster from flood, drought, insect infestation, or other causes. These loans are usually for annual operating expenses and are to be repaid within one or two years. This type of assistance differs from other assistance offered by the Farmers Home Administration in that the loans are not necessarily limited to family-type operators.

APPRAISAL OF SUPPLEMENTAL CREDIT

The appraisal of supplemental credit is directed primarily to the adjustment and farm ownership loan programs.

To appraise the use of supplemental credit as a tool for carrying out the income distribution policy objectives three kinds of effects must be examined. The first of these is the effect of the program on the farmers who received credit. The second is the effect of the program on income distribution and particularly on low incomes. The third is the relationship of the benefits gained to the cost of the program.

An appraisal of these three effects must keep the over-all objective of the program clearly in mind. The purpose of supplemental credit is to promote higher income and more efficient use of resources by family-type farmers who cannot secure the credit needed for adequate development of income and use of resources from private and cooperative credit sources. In the analysis of the program in relation to this objective it is necessary to give constant consideration to the underlaying assumption that private and cooperative credit institutions do not supply the credit needed for promotion of income and better use of resources for many family-type farms.

After consideration of the effects of the program on the borrowers, on income distribution, and on government costs in relation to benefits, a further analysis is made of the advantages which might be obtained from a program of larger size. Here a problem of scale is encountered.

Although some expansion could no doubt be accomplished without seriously affecting the current cost-benefit ratios, it is estimated that material expansion would result in less benefits per unit of loan funds and administrative costs. This would result from the higher-risk loans, from higher loan-servicing costs, and from the increased amount of management assistance needed by the lower-income borrowers.

Still another aspect of the program is the causes of the failure of private and cooperative credit sources to provide more of the credit needed for income and resource utilization improvement. It is found that lack of credit from these sources affects not only the obviously high-risk low-income farmers, but also many farmers with income definitely above the low-income level.

Achievements with Borrowers

For the most part, the families receiving supplemental credit have improved their economic status. The majority of the adjustment-loan borrowers have paid their loans in full from agricultural income, and more than half of the farm-ownership loans have been repaid although the loans run for forty years and this phase of the program has been in operation only seventeen years.

Borrowers have established gross incomes averaging from 60 to 99 per cent more (after adjustment for price change) than they had before they received the loans. Increases in productivity per acre, increases in non-real-estate capital, and changes in volume of business indicate that most of the families have been able to carry out the objectives of the program.

Some adjustment-loan borrowers have paid their loans through sale of capital goods including those purchased with loan funds, but sample studies indicate that even these families had higher incomes the last year they farmed than the year before receiving their loans. Also some families did not succeed in paying their loans from income or from sale of capital goods and eventually left the farm owing a government debt. In large part, these families have eventually paid their loans and the last year on the farm had income as high as the year before they became indebted.

The farm-ownership loans for farm purchase, enlargement, and development are designed not only to help farmers increase their income and utilization of resources through more efficient farming but also to acquire a stability of tenure. Repayment records and changes in income and net worth of these borrowers indicate that both objectives have been accomplished.

Achievements with Income Distribution

Although the supplemental-credit program must be given credit for achieving the policy objective with the families receiving loans, the direct aggregate achievements of the program in changing the income distribution of farmers or of bringing about better utilization of resources are small. Some slight change has occurred in the proportion of families within the income groups from which the loan applicants are drawn, but the over-all change in the pattern of income distribution is minor. Only a small decrease has occurred among the groups usually classed as low-income.

The primary reason for the failure of the program to affect the income distribution pattern materially is the number of loans made in relation to the number of farm families within the income ranges from which the applicants come. In the postwar period the number of adjustment loans has never exceeded 50,000, and more than 5,000 real estate loans have been made in only one year, yet the number of farmers within the income ranges similar to that of applicants is in excess of 1,250,000.

The small effect of the program on the number of low-income farmers as defined by the recent studies of the low-income problem is in part due to the fact that in many states and areas the program has not operated within the low-income level. Examination of average incomes of applicants leads to the conclusion that the available loan funds have been largely used by those families unable to secure credit from private and cooperative credit sources who were above the defined low-income groups.

Demonstration Value

Both the adjustment and the farm-ownership loan programs have made some contribution over and above that attained by the families receiving loans. The good farming practices of the successful borrowers and the attention given to adequate farm organization before the loans are made has caused other farmers to become more aware of the necessity for good farming practices and an adequate scale of business.

The demonstration value of the real estate loans for the purchase, enlargement, and development of farms is probably more noticeable than that of the non-real-estate loan program. The establishment of an adequate farm, properly developed, properly equipped, and operated with the best farm-management practices is an interesting demonstration to many other family-type operators. In many areas, the size, type, and scale of operation of the farms purchased, enlarged, or developed have tended to establish ideal patterns for other farmers to follow.

Cost-Benefit Ratio

As operated in the postwar period the non-real-estate loans for the purpose of establishing efficient farm enterprises result in some net cost to the government. Interest return is not sufficient to offset losses on principal advanced, the administrative cost of making and servicing the loans, and the management assistance. Increases in income achieved by successful borrowers, however, are sufficient to offset the cost of both the successful loans and those which result in some loss. Thus, on a cost-benefit basis the adjustment-type loan results in a net return.

With the farm-ownership loan program, the interest return on loans of current size is sufficient to result in a net gain to the government for those loans made with direct government funds. Some cost in excess of return to the government is experienced with loans advanced from private funds and insured by the Farmers Home Administration. Also, some cost has been incurred with the smaller, lower interest loans made in earlier years. On a cost-benefit basis, of course, the increased income attained by the borrowers is in excess of the net cost of the insured loans and the earlier direct loans.

Problems of a Larger Program

If the adjustment-loan program were to be materially expanded, the excess of benefit as measured by increased income over cost would probably decrease and if the program were made very large, would perhaps result in actual cost in excess of increased income. This would be a result of a higher ratio of loss on loans, a lower percentage of successful borrowers, and increased administrative costs due to the more intensive supervision needed with the lower-income borrowers. In view of the over-all objectives of the program, however, it does not seem that this possible net cost over increased income of borrowers should necessarily be the basis for determining that the program should not be expanded. Programs for the improvement of the distribution of income often cause a net cost to the government.

With the farm-ownership program it would seem that material expansion would be possible before there would be any sizeable cost of making and servicing loans which could not be offset by interest return. The farm-ownership program has covered such a small portion of its potential field that the number of loans could probably be increased several times before the more risky advances would be made.

CONCLUSIONS

Among the conclusions which can be drawn from appraisal of the supplemental-credit program as an instrument of agricultural policy are the following:

1. The program has been beneficial to those families who received assistance.

2. The over-all effect of the number of loans on the income distribution within agriculture has been small, and the program has had little quantitative effect on the number of low-income farmers.

3. The loan programs have had demonstrational value. Contribution has been made toward defining the minimum resources necessary for adequate efficient farming.

4. Although the direct farm-ownership loans at current interest rates result in some net gain to the government, the other loans result in some net cost. Increases in income of borrowers, however, is in excess of the net outlay by the government.

AN INVESTIGATION OF 2,1′,2′-TRICHLORO-2,2′-DIMETHYL-1,1′-AZOXYPROPANE AND CERTAIN RELATED COMPOUNDS

by ALEXANDER PICKENS MATHERS*

The present investigation is a part of a general research program in this Laboratory concerning the reaction of pure nitrosyl chloride with olefins and a study of their reaction products. During a previous phase of the investigation an oil was obtained when isobutylene bisnitrosochloride was treated with concentrated hydrochloric acid in the range of 60-75°. On purification, the oil was found to be a colorless to pale yellow material boiling at 105° (2 mm.) or 118.5-120° (6 mm.). It was reported to be insoluble in water, aqueous acids, and alkalies, but soluble in the common organic solvents. It was labile to heat at atmospheric pressure, losing hydrogen chloride when it decomposed; inert to bromine in carbon tetrachloride, potassium permanganate in acetone, and acid dichromate (fifteen minutes) at room temperature. However, it reacted readily with alcoholic sodium and potassium hydroxides and piperidine. On the basis of the elementary analysis and molecular weight determinations, the compound was found to have the molecular formula $C_8H_{16}ON_2Cl_2$. It also was found to have a density of d^{25}_4 1.219, an index of refraction of n^{25}_D 1.4857, and a molecular refraction of 61.58. In a series of experiments involving oxidation, reduction, thermal decomposition, hydrolysis, and treatment with alcoholic bases; acetone, methacrolein, isobutyraldehyde, hydrazine, and ammonia were identified and there was definite evidence to indicate that alpha-chloroisobutyric acid was produced in the oxidation experiment. However, most of the chemical evidence was only qualitative and the physical data gave little insight into the structural features of the material. Therefore, it was not possible to establish the structural formula of the oil. However, the evidence indicated that the carbon skeleton and the tertiary chlorine atoms of the parent compound, isobutylene bisnitrosochloride, were still intact and that the two nitrogen atoms were possibly linked together. On the basis of the above work, the material was believed to be a new compound and the reaction by which it was formed a new type of reaction.

The purposes of the present investigation were to determine the structure of the compound, to propose a reaction mechanism for its formation, to examine more thoroughly its chemical and physical properties, and to study the chemistry of a number of related compounds. For

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convenience the oil is referred to as azoxychloroisobutane. Its name according to the nomenclature of the International Union of Pure and Applied Chemistry will be given later.

Azoxychloroisobutane was prepared during the course of this investigation by two methods; the first by treatment of isobutylene bisnitrosochloride, m.p. 103-104°, with concentrated hydrochloric acid at temperatures ranging from 55 to 75°. Upon being heated with stirring an exothermic reaction began a little below 60°; the isobutylene bisnitrosochloride disappeared and an oil formed which settled to the bottom of the flask. The reaction mixture was then diluted with water, the oil extracted with ether, and the ethereal extract washed with water and dried. After removal of the ether at atmospheric pressure, the oil was purified by distillation under reduced pressure. The second method consisted in carrying out the reaction in ether or benzene solution. Isobutylene bisnitrosochloride, m.p. 103-104°, was added to the solvent, the reaction mixture was then saturated with anhydrous hydrogen chloride at approximately room temperature, and hydrogen chloride was continuously bubbled into the mixture as rapidly as it was absorbed. Isobutylene bisnitrosochloride is fairly soluble in either of these solvents, and thus the reaction mixture was essentially homogeneous. Completion of the reaction was determined by the disappearance of the bisnitrosochloride and the escape of hydrogen chloride from the exit tube attached to the system. The material obtained by both methods had essentially the same physical properties; e.g., d^{25}, 1.219; n^{25}_{D} 1.4848; and b.p. 115-116° (3 mm.). Likewise the chlorine content was found to be approximately 40.67 per cent for the different lots of the compound. These results are in excellent agreement with those reported in the earlier investigation.

Although the two methods seem dissimilar in that the first appears to involve a heterogeneous reaction, the mechanism is believed to be the same and the reaction to be homogeneous in both cases. In concentrated hydrochloric acid, reaction does not occur until a temperature is reached at which isomerization or melting of isobutylene bisnitrosochloride occurs and hydrogen chloride is evolved from the aqueous layer and is thus available to enter the liquid organic phase.

The reaction involved in the preparation of azoxychloroisobutane offered few clues to the structure of the compound, and further a reinvestigation of the earlier work showed that additional chemical and physical data were needed to prove the structure of the compound. Therefore, additional chemical reactions were studied, the most informative of which were methanolysis, hydrolysis, and reduction by means of lithium aluminum hydride. Additional physical data were obtained from a study of the infrared and ultraviolet spectra of the compound.

When the compound was dissolved in methanol and treated with

anhydrous hydrogen chloride, a reaction took place which resulted in the precipitation of a white crystalline solid identified as hydrazine dihydrochloride. It was obtained in approximately an 80 per cent yield based on the nitrogen content of azoxychloroisobutane. From the alcoholic solution there were obtained methyl alpha-chloroisobutyrate and alpha-chloroisobutyraldehyde dimethyl acetal, both in approximately 75 to 80 per cent yield, based on the assumption that one molecule of azoxychloroisobutane gave one molecule each of the ester and acetal. Similarly, the products of hydrolysis should be alpha-chloroisobutyric acid, alpha-chloroisobutyraldehyde, and hydrazine or the corresponding unsaturated acid and aldehyde, methacrylic acid and methacrolein. In the actual experiment methacrylic acid, methacrolein, and hydrazine dihydrochloride were obtained. From the above evidence plus the molecular formula, $C_8H_{16}ON_2Cl_2$, the structure is:

$$(CH_3)_2C(Cl)\text{-}\overset{|}{C}\text{-} \cdots \text{-}\overset{|}{C}\text{-}C(Cl)(CH_3)_2 \quad N_2H_2O(Cl \text{ plus one double bond or ring.}$$

When an aqueous alcoholic solution of the compound was treated with a solution of potassium iodide there was no liberation of iodine. This proves the absence of both peroxide and positive chlorine. Therefore, no O-Cl or N-Cl bonds are present and all of the chlorines must be attached to carbon atoms. The absence of these bonds, in addition to the presence of the aldehyde and acetal in the reaction products listed above, and further, a high yield of methacrolein from the treatment of azoxychloroisobutane with alcoholic potassium hydroxide, all indicate that the compound contains the $\text{-}\overset{|}{\underset{Cl}{C}}\text{-}N$ grouping. The structure now becomes:

$$(CH_3)_2C(Cl)\text{-}\overset{|}{\underset{Cl}{C}}\text{-} \cdots \text{-}\overset{|}{\underset{Cl}{C}}\text{-}C(Cl)(CH_3)_2 \quad N_2H_2O \text{ plus one double bond or ring.}$$

The reduction of azoxychloroisobutane by lithium aluminum hydride gave a 51 per cent yield of s-diisobutylhydrazine plus approximately 30 per cent yields each of isobutyraldehyde and isobutylhydrazine. This indicates very strongly the presence of a nitrogen to nitrogen linkage and also provides very strong evidence for the skeletal structure $(C)_2\text{-}C\text{-}C\text{-}N\text{-}N\text{-}C\text{-}C\text{-}(C)_2$. Further support for the nitrogen nitrogen linkage comes from the observation that hydrazine dihydrochloride was obtained upon hydrolysis of azoxychloroisobutane. The structure thus becomes:

$$(CH_3)_2C(Cl)\text{-}\overset{|}{C}\text{-}N\text{-}N\text{-}\overset{|}{C}(Cl)C(Cl)(CH_3)_2 \quad H_2O \text{ plus one double bond or ring.}$$

The reduction of azoxychloroisobutane to s-diisobutylhydrazine also

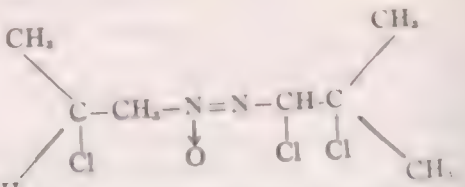
eliminated the possibility of a structure in which one of the carbons is linked to nitrogen through oxygen, -C-O-N=N-C-, for the latter structure could hardly be expected to yield s-diisobutylhydrazine on reduction. Also, the azo ethers are known to be unstable. The structure was then limited to an acyl hydrazide, a substituted oxadiazole, or an azoxy compound. The first can be excluded with reasonable certainty because it should be a solid at room temperature. Moreover, the resistance of azoxychloroisobutane to oxidation by either permanganate or dichromate solutions showed the absence of NH bonds and, therefore, eliminated both the acyl hydrazide and the substituted oxadiazole. The NH bonds were also ruled out on the basis of the infrared data as well as OH and CO groups. Further, multiple bonds involving carbon were excluded on the basis of the infrared data. The infrared bands at 6.58 and 7.70 microns are in excellent agreement with the values reported by other workers, 6.54-6.60 and 7.46-7.70 microns, respectively, for the aliphatic azoxy group. In addition, the absorption maximum in the ultraviolet region at 222 millimicrons is in very good agreement with results given by other workers, 217-223.5 millimicrons, for the aliphatic azoxy group. Also, the molecular refraction supports the presence of an azoxy group.

Under these circumstances, the only positions available for the location of the remaining three hydrogen atoms are on the alpha and alpha'-carbon atoms. Now the structure becomes:

$(CH_3)_2C(Cl)\text{-}CH_2\text{-}N \overset{(O)}{\cdots} \text{-}N\text{-}CH(Cl)C(Cl)(CH_3)_2$ with the N_2O group appearing as one of the three possible azoxy structures

A cyclic structure for the azoxy group is untenable because of the absorption maximum in the ultraviolet region at 222 millimicrons. Saturated bonds such as would be necessary for the cyclic structure would give no appreciable absorption in this region of the spectrum and, therefore, the structure is narrowed to that of an open chain azoxy group. Hence there remains only a decision to be made between the two possible open chain azoxy structures. The -CH(Cl)-N= grouping should form an aldehyde on hydrolysis regardless of the position of the oxygen atom; however, the $-CH_2\text{-}N=$ grouping would not be expected to undergo an intramolecular oxidation-reduction reaction unless it were adjacent to the highly oxidized nitrogen, as would be the case in the $-CH_2\text{-}N(O)=$ grouping. On the other hand, if the oxygen atom were attached to the terminal nitrogen atom, hydrolysis of the compound would very probably produce an aldehyde and nitrogen and the portion of the molecule containing the $-CH_2-$ group should give rise to some type of an alcohol or related products. Therefore, the oxygen must reside on the nitrogen

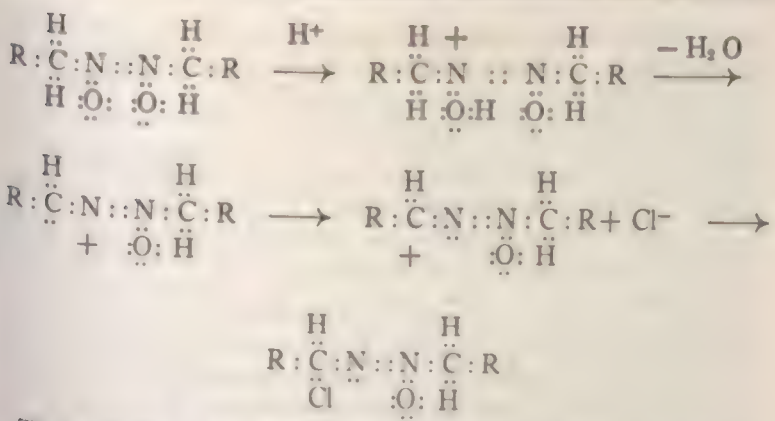
adjacent to the $-CH_2-$ group. The proof of structure is now complete and the compound is



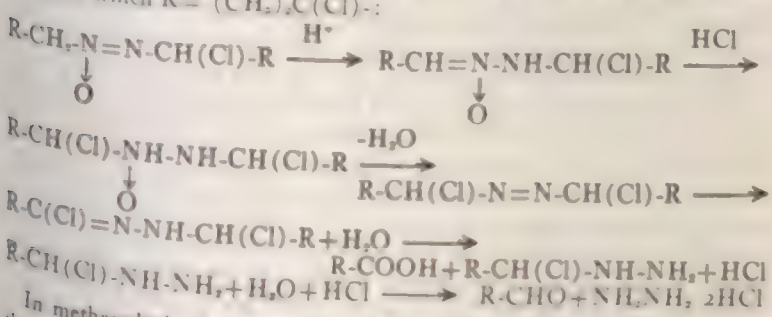
2,1′,2′-Trichloro-2,2′-dimethyl-1,1′-azoxypropane

The proposal of a plausible mechanism for the formation of azoxychloroisobutane has already been mentioned as one of the purposes of this investigation. One of the possible ways for the formation of azoxychloroisobutane is a reaction involving the monomer and a rearrangement product of isobutylene bisnitrosochloride, while still another is perhaps a reaction involving two molecules of the rearrangement product. The logical rearrangement product is alpha-chloroisobutyraldoxime, since the conditions for rearrangement of isobutylene bisnitrosochloride to this oxime, except for low acidity, are quite comparable to those used in the preparation of azoxychloroisobutane. To exclude the oxime as an intermediate in the preparation of azoxychloroisobutane, a series of experiments was carried out in which first the oxime and then a mixture of the oxime and isobutylene bisnitrosochloride were subjected to the action of concentrated hydrochloric acid under the conditions employed in the preparation of azoxychloroisobutane. In the experiments involving only the oxime with hydrochloric acid, the products obtained were methacrolein and hydroxylamine hydrochloride, both in nearly quantitative yields. When both the oxime and isobutylene bisnitrosochloride were present in the reaction mixture, hydroxylamine hydrochloride and methacrolein were obtained in sufficient quantities to account for the complete hydrolysis of the oxime. Further, azoxychloroisobutane was obtained in about the normal quantity expected from the amount of isobutylene bisnitrosochloride used. This showed that alpha-chloroisobutyraldoxime was not an intermediate in the reaction.

Since dissociation and rearrangement were apparently not involved in the formation of azoxychloroisobutane, the following series of equations is proposed to represent the reaction between isobutylene bisnitrosochloride and hydrogen chloride. In this series of equations $R = (CH_3)_2C(Cl)-$.



The hydrolysis and methanolysis of azoxychloroisobutane have already been mentioned in connection with the proof of structure. Considering the azoxy group to be a formal analog of the nitro group, the mechanism of the hydrolysis can be assumed to parallel the action of mineral acids on primary aliphatic nitro compounds. Hence, for the reaction of azoxychloroisobutane with concentrated hydrochloric acid (hydrolysis) in alcoholic solution, the following series of equations is proposed for the mechanism in which R = $(CH_3)_2C(Cl)$-:



In methanolysis the same mechanism must apply, for the products of the reaction differ only in that an ester and acetal are formed instead of the acid and aldehyde. Hydrazine dihydrochloride is a common product in both hydrolysis and methanolysis. Methyl alpha-chloroisobutyrate was synthesized by treating alpha-chloroisobutyryl chloride with methanol, and alpha-chloroisobutyraldehyde dimethyl acetal was synthesized by chlorinating isobutyraldehyde dimethyl acetal and also by treating alpha-chloroisobutyraldehyde with methanol. The properties of the synthetic materials agreed with those of the respective products obtained from azoxychloroisobutane. No physical constants for alpha-chloroisobutyraldehyde dimethyl acetal were found in a search of the literature.

In the case of the reduction of azoxychloroisobutane by lithium aluminum hydride, s-diisobutylhydrazine results when the chlorine atoms are replaced by hydrogen atoms and when the azoxy group is reduced to the state of hydrazine in the reaction products can be accounted for on the basis of partial reduction of azoxychloroisobutane to $(CH_3)_2CHCH_2NHN=CHCH(CH_3)_2$, or $(CH_3)_2CHCH_2-N=N-CH_2CH(CH_3)_2$. The hydrazone would hydrolyze in the process of working up the reaction mixture while the azo compound could first isomerize to the hydrazone which would then hydrolyze. The liberation of four moles of hydrogen per mole of azoxychloroisobutane during the reduction can be accounted for on the assumption that two of the chlorine atoms are removed as hydrogen chloride, owing to the basic nature of the reagent, and the oxygen atom of the azoxy group is removed as water. Now the hydrogen chloride and water react with the excess hydride to yield the four moles of hydrogen.

In addition to the physical properties of azoxychloroisobutane mentioned earlier, the compound was crystallized from petroleum ether and found to melt at 4.5 to 6.5°. The molecular refraction was redetermined to be 61.48, which is in very good agreement with the theoretical value of 61.414.

In addition to the spectroscopic data mentioned earlier, the infrared spectra of isobutylene bisnitrosochloride, tetramethylethylene nitrosochloride, methyl alpha-chloroisobutyrate, alpha-chloroisobutyraldehyde dimethyl acetal, and 2,5-diisopropyl-1,3,4-oxadiazole were determined. The infrared absorption bands shown by these spectra indicate very strongly certain structural features of these compounds. Of particular interest are the very strong absorption bands at 7.35 and 7.40 microns which appear in the spectra of tetramethylethylene nitrosochloride and isobutylene bisnitrosochloride, respectively. This absorption band indicates the double bond character of the nitrogen-to-oxygen bond, N=O. The absence of an absorption band in this region for azoxychloroisobutane indicates the absence of the N=O group. The presence of an absorption band at 7.70 microns in the spectra of azoxy compounds has been attributed by other workers to the N=N character of the azoxy group, and the occurrence of a band at this wave length in the spectra of both azoxychloroisobutane and isobutylene bisnitrosochloride is now interpreted to indicate a similar type of bonding in these compounds. The absence of this absorption band in the spectrum of tetramethylethylene nitrosochloride offers support for the generally accepted belief that the latter compound is essentially monomeric in character.

Ultraviolet absorption data were also determined for isobutylene bisnitrosochloride, tetramethylethylene nitrosochloride, isobutyraldehyde isobutyryl hydrazone, and a few other compounds. The very strong

absorption maximum occurring at 300 millimicrons in the spectrum of isobutylene bisnitrosochloride is interpreted to indicate the nitrogen-to-nitrogen bonding of the bisnitroso group, and the lack of such absorption in the spectrum of tetramethylethylene nitrosochloride to indicate the absence of a similar bonding in the latter compound. Tetramethylethylene nitrosochloride shows no appreciable absorption in this region of the ultraviolet spectrum. The ultraviolet absorption bands of isobutyraldehyde isobutyrylhydrazone and the other compounds have very few points in common with that of isobutylene bisnitrosochloride or that of azoxychloroisobutane.

In the course of this investigation the following eight new compounds were prepared and their melting points determined: alpha-chloroisobutyraldehyde 2,4-dinitrophenylhydrazone, alpha-methoxyisobutyraldehyde 2,4-dinitrophenylhydrazone, alpha-ethoxyisobutyraldehyde 2,4-dinitrophenylhydrazone, p-bromophenacyl methacrylate, p-bromophenacyl alpha-hydroxyisobutyrate, o-nitrobenzaldehyde isobutylhydrazone, o-nitrobenzaldehyde isobutyrylhydrazone, and isobutyraldehyde isobutyrylhydrazone. The tertiary chlorine in alpha-chloroisobutyraldehyde 2,4-dinitrophenylhydrazone was found to be very labile, and isobutyraldehyde isobutyrylhydrazone proved to be exceedingly susceptible to hydrolysis.

Since azoxychloroisobutane is the first aliphatic chloroazoxy compound to be prepared, the reaction by which it is obtained may well offer a method for the synthesis of other compounds of this type.

AN ECONOMIC SURVEY OF THE DIESEL LOCOMOTIVE IN THE RAILROAD INDUSTRY OF THE UNITED STATES

by HUGH STANTON NORTON*

The dissertation undertakes an examination of the influence of the diesel locomotive on the railroad industry of the United States. The major portion of this influence has manifested itself during the decade 1945–1955. Although the diesel was widely used in marine operations and for stationary power installations, certain technical problems delayed its entry into the railroad field until the 1920's. From 1920 to 1940 it was widely used as a switching locomotive and for other relatively light operations. After 1940 the diesel became widely used in general rail service and by 1955 it had become the dominant type of motive power, performing approximately 80 per cent of all rail operations.

The progress of this innovation has brought about great change within the railroad industry and the industries associated with it. Such changes can be detected upon several levels—the railroad industry, the industries providing railroad supplies and equipment, and the aggregate economy. In general, the effects of the innovation manifest themselves most clearly on the railroad industry level and are least discernible on the level of the aggregate economy.

Sources and Quality of Data

The size and complexity of the railroad industry made it necessary to rely heavily upon secondary sources of data, although, in some cases, data were obtained directly from the industries concerned. The Interstate Commerce Commission, the Association of American Railroads, and other groups collect a substantial body of information which is made public either as a matter of routine or in the course of special studies. Since the diesel innovation has been in progress, the trade journals have carried much information of current interest. The current literature has been a valuable source of data, especially in view of the rapid progress which the diesel has made.

The Diesel and Railway Operations

In most cases, the diesel enables railroads to perform operations more efficiently and more economically than was possible with steam locomotives. The advantage of the diesel manifests itself in several ways. Chief among these is the fact that the diesel reduces the time spent in operations. The diesel does not have any particular advantage over its steam counterpart relative to speed *per se*. However, in railroad operations

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the crucial factor is schedule speed, i.e., speed between two given points, including stops for service and fueling and other routine operations. In almost every case, the diesel increases schedule speed through its ability to move trains up and down grades, start and stop with little effort, and especially through its adaptability to rapid servicing.

To some extent the superior weight distribution and drive mechanism of the diesel make it less damaging to track and structures, despite the fact that the average diesel is somewhat heavier than its steam counterpart. An important consideration in the realm of operations is that of safety and in this area the diesel is markedly superior. Operating safety is enhanced by the design of the diesel and by the almost complete absence of smoke and steam. During the relatively short period of operation the safety record of the diesel is impressive.

Perhaps the most important operating advantage of the diesel stems from increased availability. The diesel spends less time in repair or inspection than the steam locomotive. It needs no time for fires to be built or cleaned before and after use and it requires no boiler washing. Fuel and supplies can be put aboard quickly. Consequently the diesel is more often available for utilization than the steam locomotive. This means that a given number of locomotives can perform more work, or a railroad can move a given amount of traffic with fewer locomotives. The availability factor somewhat transcends the area of operations, since it helped to overcome the original cost advantage of the steam locomotive. Despite the operating advantage of the diesel, railroads have been able to make relatively few operating changes due largely to union or other institutional factors.

The Diesel and Maintenance

One of the significant advantages of diesel operation is found in a comparison of maintenance techniques of steam and diesel locomotives. Since locomotive maintenance involves large expenditures, savings in this category are important.

Although the diesel is a more complicated mechanism than the steam locomotive, and is more precise mechanically, it lends itself to expeditious maintenance. The most important characteristic in this regard is the fact that the diesel is composed of several major components which can be removed and replaced or interchanged. The steam locomotive is more apt to be an integral unit, and repairs necessary on any major component means that the whole locomotive must be taken out of service. The high standards of diesel maintenance are in part a result of the fact that maintenance is carried out in clean, well-lighted surroundings. The modern diesel house is a relatively compact structure which combines the functions of the steam roundhouse and back-shop, i.e., the center of heavy repairs. To some degree, the diesel shop has an advantage merely

because it is new and modern in comparison to the typical steam locomotive shop, and in those cases where steam shops are new and modern, superior results have been achieved. However, the design of the diesel imparts advantages which cannot be regained by the steam locomotive.

A second factor makes itself felt in the field of maintenance, namely, performance of heavy maintenance by the manufacturer of the locomotive. In this sense heavy repairs include periodic overhaul, or rebuilding as a result of serious accident. Although there seems to be no valid reason, other than tradition, steam locomotive maintenance of all types was performed by the railroad. The disadvantages of such a practice are substantial. The railroad is required to maintain a sizeable investment in plant and inventory and to keep a skilled staff of workers. A few railroads were able to utilize this plant to build locomotives from original plans, but such practice was limited. At best, the carriers were engaged in activity which was not part of their primary purpose. Diesel builders recognized the advantage of increased stability which would accrue to their industry from the performance of this work. In addition to the basic overhaul and rebuilding, diesel manufacturers also "upgrade" locomotives at the time of rebuilding, by incorporating into them the most recent developments. As a result of these practices few railroads undertake such thorough maintenance of diesels as they did with steam locomotives. The high degree of standardization in diesels means that the necessary inventory of replacement parts and tools is often much smaller than was necessary with steam locomotives.

Plant and Structure Requirements

All locomotives require certain terminal and wayside structures and facilities to perform their assigned tasks. In general, the diesel requires fewer facilities and consequently less investment than its steam counterpart.

The most obvious saving is in coal towers and water tanks. During the years of steam, as the steam locomotive became larger and more powerful, the supply of fuel and water was a constantly increasing problem. Obviously, the diesel eliminates the need for these facilities completely. However, only the road which has become completely dieselized can maximize these advantages. So long as any steam locomotives remain in operation, at least some steam facilities must be kept intact. The diesel also makes possible some reduction in facilities necessary for maintenance. It may also reduce the need for other facilities through general operating efficiency, although there is as yet little evidence of this effect. Some new building of terminal facilities has been necessary in order to support the diesel which has counteracted the full effects of decreasing facilities.

The Diesel and Labor.—The diesel in common with all innovations,

has had an influence upon labor. In contrast with some "classic" innovations, the immediate influence of the diesel upon labor has been relatively slight. In all probability three factors account for this situation: (1) the presence of a strongly entrenched union, (2) the generally strong demand for labor in the years after the Second World War, and (3) the fact that the railroad industry was relatively stable at the time of the diesel innovation. Such labor savings as have become apparent at this time are largely due to the over-all efficiency of the diesel, resulting in a reduction in the number of train crews required and in locomotive maintenance forces. Indeed the reduction in shop forces has been more marked than the influence upon train and engine crews. Those firemen and engineers who have retained their jobs have enjoyed an improvement in working conditions. The crew accommodations on the diesel are markedly superior to those on a steam locomotive.

Among shop forces, the diesel has been a disturbing element. Some workers, such as boilermakers, find their skills completely unnecessary, while the number of workers in other trades can be reduced because of the tendency for more work to be done outside the shop. Since seniority is a strong force in rail unions, the ultimate burden has in most cases been borne by younger workers who leave the industry. Little difficulty has been encountered in retraining workers for diesel service. Machinists and electrical workers have quickly learned to adapt themselves to diesel-maintenance techniques. The fact that wage rates have been rising rapidly and various "fringe" benefits have been granted to workers since 1945 tends to obscure any benefits stemming from labor savings. The unions have attempted with some success to protect themselves from any adverse effects stemming from the innovation.

Direct Operating Costs

Motive power operating costs account for approximately 25–30 per cent of total railroad operating costs. Most of the data concerning diesel costs of operation were taken from the Interstate Commerce Commission publication, *Statement 5025, A Study of Motive Power Costs*, published in 1950. The purpose of the study was to compare costs of operating steam and diesel locomotives. Drawing upon the information available in routine reports from carriers as well as special data gathered for this purpose, the Commission was able to present a comprehensive comparison of motive power operating costs. These data reveal that in almost every category the diesel locomotive is less costly to operate than the comparable steam locomotive.

Table 1 shows the direct operating costs arranged on a ton-mile basis. Table 1 shows that in only two accounts, viz., lubrication and carrying charges is the diesel locomotive substantially more costly to operate than steam.

TABLE 1

MEDIAN OPERATING COSTS, CENTS PER 1,000 GROSS TON-MILE AND PER CAR-MILE, STEAM AND DIESEL LOCOMOTIVES, SELECTED RAILROADS

Account	Freight		Diesel as a Percentage of Steam	Passenger		Diesel as a Percentage of Steam
	Steam	Diesel		Steam	Diesel	
Fuel	30.30	9.70	32	4.20	1.70	40
Water	1.42	0.23	16	0.20	0.01	5
Lubrication	0.67	1.09	163	0.13	0.32	246
Other Supplies	0.36	0.13	36	0.06	0.30	500
Engine House	6.60	1.04	16	1.10	0.31	28
Repairs	25.50	7.50	29	3.80	2.70	71
Labor	29.63	34.55	117	0.24	0.26	108
Carrying Charges	4.0	14.00	350	0.004	0.12	3000
Total	**98.48**	68.24	58	9.73	5.72	58.7

Source: compiled and calculated from I.C.C. data, Statement 5025.

In any comparison of operating costs, it is important to keep in mind that the figures relative to steam locomotives in Table 1 are for "average steam locomotives". Average steam locomotives constitute a very heterogeneous group. The steam locomotive of median age in 1945 had been built in 1916 and relatively few were "modern", i.e., built after 1937. The influence of the locomotive age factor has doubtless been important in the progress of the diesel innovation.

Table 2 shows the ton-mile cost of operation for average steam, modern steam, and diesel locomotives. It is apparent that while the modern steam locomotive makes a better showing than the locomotive of average age it is still inferior to the diesel. Also, the operation of any steam locomotives, modern or otherwise, would not solve the problem of providing for fuel, water, and upgraded track and structures. In short, although the modern steam locomotive is more efficient than the average, it is subject to the inherent disadvantages of its type. One can conclude that the diesel innovation might have proceeded more slowly if modern locomotives had been more widely used, but it does not seem likely that it would have been precluded.

TABLE 2

OPERATING COSTS, DOLLARS PER 1,000 GROSS TON-MILES, MODERN STEAM LOCOMOTIVES COMPARED WITH AVERAGE, FREIGHT SERVICE, SELECTED RAILROADS

Account	Dollars Per 1,000 Gross Ton-Miles	
	(Modern)	(Average)
Fuel	$0.2150	$0.2813
Water	.0109	.0143
Lubricant	.0054	.0060
Other supplies	.0027	.0030
Engine house	.0363	.0675
Repairs	.2095	.2862
Labor	.1141	.1693
Carrying charges	.0869	.0612
Total	$0.6808	$0.8888

Source: I.C.C. Statement No. 5025, p. 72.

Operating Experience of Selected Carriers

In order to supplement the material relative to average costs and to illustrate the fact that these costs may be influenced one way or another by differing circumstances, it is necessary to consider the operating experience of certain selected carriers. The basis for selection of these railroads is an attempt to provide a broad cross-section of operating experience. Many factors such as geographic characteristics, plant, type of traffic, condition of motive power, and other considerations determine the motive power decisions of railroad management.

By 1955 a substantial number of railroads had become completely dieselized or had committed themselves to a program of complete dieselization. Others had adopted the diesel in part, while only one major road operated without any diesels. It is of particular interest to examine the latter case. The Norfolk and Western Railway is the only major railroad now operating without diesels, although in mid-1955, several diesel switching locomotives were on order. The Norfolk and Western combines a unique number of circumstances favorable to steam. It has local supplies of high-grade coal and water. It has a superior roster of steam locomotives, most of which were constructed by the railroad's mechanical department. The principal revenue tonnage of the Norfolk and Western is coal, and the prevailing loaded traffic movement is downgrade, from the coal fields to tidewater at Norfolk, Virginia. A railroad embodying these characteristics has relatively little to gain from the operation of diesels.

At the other end of the scale are roads of which the Gulf, Mobile and Ohio is typical. The Gulf, Mobile and Ohio is a relatively small Class I railroad operating in the Midwest and South. At the conclusion of the Second World War the Gulf was operating with a heterogeneous group of aging locomotives. Line and structures were in need of refurbishing. The Gulf has no fuel sources comparable to those of the Norfolk and Western. The diesel enabled the Gulf, Mobile and Ohio to modernize its motive power fleet without heavy steam locomotives which would have necessitated considerable upgrading of the line. Because the railroad was relatively small, dieselization could be carried to completion in a short period, and coal towers, water tanks, and other steam supporting units could be completely removed. Generally, small railroads are able to proceed with a diesel program more rapidly than larger roads and are able to quickly reap the advantages of complete dieselization.

Among large railroads, the Southern Pacific is committed to dieselization, and the Santa Fe has recently completed its diesel program. Each of these roads has certain characteristics which make the diesel either more or less desirable. In one case, the Union Pacific with large resources of fuel, has found the diesel more desirable because of its efficient

operating characteristics than because of the factor of reduced costs. Large railroads such as the New York Central and the Pennsylvania have, of necessity, extended the diesel program over a long period of time. The Pennsylvania with large electrified areas plans to retain the electric locomotive where it now operates, using the diesel almost entirely elsewhere. Special considerations such as poor water or composition of traffic may speed dieselization as in the case of the Western Pacific or retard it as was the case with the coal carrying roads. In summarizing the experience of the railroads, it seems clear that except in a rare combination of circumstances, such as those prevailing on the Norfolk and Western, the diesel is markedly advantageous.

Financing the Diesel

Consideration must be given to the financial arrangements governing the acquisition of diesels. Clearly no innovation, no matter how beneficial it might appear, could progress rapidly in an industry without favorable financial conditions. The great bulk of diesel purchases were carried out through the means of the equipment trust. Equipment trusts are and have been for many years the principal means of acquiring railroad rolling stock. There are various legal and financial advantages connected with the equipment trust, and they have been easily marketed within the past decade. Some use has been made of conditional sale contracts, long term leases, and other types of financial arrangements new to the railroad field, but these have not assumed significant proportions. Almost no capital for the purchase of diesels has been secured from the sale of stocks and bonds.

The Future of Motive Power

Although there are other types of motive power which are competitive with the diesel they do not at present appear to be likely to dislodge it from the dominant position it now holds. Chief among these is the electric locomotive which has been used for half a century. The electric locomotive is undoubtedly superior under certain conditions. Generally, very heavy traffic areas, long tunnels, or urbanized areas lend themselves to electrification. Those electric installations now in use are not likely to yield to the diesel, but the great cost of constructing transmission systems appears to be a major obstacle to future electrification even where other conditions are favorable.

Of the more recent developments, the turbine locomotive, steam or gas, is a possible competitor. Both types of turbine locomotives are in use on a small scale at the present time. The conventional steam locomotive of modern design cannot be seriously considered as a threat to the diesel. Experiments are underway with atomic power, but no such locomotives have been constructed.

The diesel innovation has had a profound influence upon the locomotive building industry. The structure of the industry has changed from the prewar emphasis on steam with a minor output of diesels, to one of diesel output with no steam locomotives at all, for domestic use. The principal manufacturer is a subsidiary of an automobile manufacturer, with no history as a steam locomotive builder. The traditional builders of steam locomotives have survived only by focusing their attention on the diesel.

Conclusions

The conclusions which may be drawn from a study of the diesel innovation are of necessity somewhat tentative. It seems clear that the average steam locomotives in operation at the time of the diesel innovation could not match the advantages of the diesel from the standpoint of operating efficiency or operating costs. Further, even the modern steam locomotive, although it is superior to the average, is surpassed by the diesel. Consequently, while the modern steam locomotive might have delayed the progress of the diesel innovation, it would not have precluded it.

In the realm of operations, the diesel has had considerable influence although it seems doubtful that any substantial reduction in rail rates can be achieved as a result. However, the diesel has already enabled the railroads to improve their competitive position from the service standpoint, and this influence will no doubt continue. For various reasons, the influence of the diesel on labor has been attenuated, but it will doubtless be more noticeable in the future.

The diesel has been responsible for a substantial amount of the large investment in plant and equipment since the end of the Second World War. However, in view of the low rate of capital formation during the depression and war years, much of this investment would have been necessary under any circumstances, and would have been carried out independently of the diesel.

Closely related to this question is the influence of the diesel on suppliers and manufacturers of equipment. There is little question that the demand for locomotives was much enhanced by the diesel and the structure of the locomotive building industry has been drastically altered.

The ultimate effect of the diesel innovation will be its ability to further reduce the ton-mile cost of transportation and thus contribute to the efficiency of the economy.

A STUDY OF PSYCHOLOGICAL CHANGES INDUCED BY RESERPINE THERAPY IN A GROUP OF SEVERELY DISTURBED PSYCHOTICS

by ROLAND HENRY TANCK *

The introduction of tranquilizing drugs in psychotherapy has created an urgent need for research to determine the role they should play in the treatment of the mentally ill. With the help of the staff of St. Elizabeths Hospital, Washington, D. C., a study was undertaken to learn more about the psychological effects of one of these tranquilizing drugs (reserpine) on severely disturbed psychotic patients.

Of the 108 agitated, assaultive, hostile, and violently disturbed patients chosen for this study, a geriatic group of 20 was dropped from the main sample because of deaths, feebleness, and inadequate response to psychological tests. Of the remaining 88 patients, 73 were schizophrenic and 15 were psychotics of various other diagnosis. The average age was about 37 years and the average time in the hospital was almost 6 years.

After these patients had been arranged into matched pairs on the basis of age, length of hospitalization, diagnosis, and severity of illness, the members of the pairs were divided into the experimental and control groups by means of a chance technique. It was not known by anyone involved in the study to which group any particular patient had been assigned.

As an indicator of pre-therapy status, all patients were evaluated initially with the measures chosen for this study. These were (1) Lorr's Multidimensional Scale for Rating Psychiatric Patients (MSRPP), which consists of ratings by a psychiatrist as well as by the nurse or attendant most familiar with the patient's daily ward behavior; (2) an abbreviated Form I Wechsler-Bellevue Intelligence Scale (Information, Similarities, Digit Span, Block Design, and Vocabulary); and (3) an individual Rorschach.

Immediately after the completion of this preliminary evaluation, one group of patients received oral and intramuscular reserpine according to dosages considered optimum by the physician in charge. In an identical manner, the control group received oral and injected placebo. Only the study coordinator knew which medication was being given to any particular group.

During the seventh week the evaluations were repeated for all patients, and at the beginning of the eighth week, the medications were switched so that the group which had been receiving reserpine now received

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placebo and the placebo group began receiving reserpine. This change in medication was made without the knowledge of the patients and without any change in the experimental routine. After the second medication period of seven weeks the measures were repeated.

Results for the three measures used in this study were as follows:

Lorr's MSRPP.—Intra-group analysis shows that after reserpine therapy the factor scores changed significantly in the direction of greater normality in nine of eleven factors for the group which received reserpine initially. The patients who received reserpine after placebo made significant gains in only one of eleven factors while on the drug. Since the placebo group usually made gains in the same direction as the group on reserpine, the between-group differences were significant in only three of the factors.

The morbidity score which reflects over-all status and is based on the factor scores showed a highly significant improvement for the initial reserpine group, and no appreciable gain for reserpine treated patients who had first undergone placebo medication.

Pattern scores which reflect a more general syndrome of psychopathology showed few significant or consistent changes except that both groups showed greater conformity to the normal pattern after they had received reserpine therapy.

Wechsler-Bellevue Scale Form I (abbreviated).—The improvement shown in test-retest Wechsler-Bellevue Scale Performance reached or approached significance in all subtests for the reserpine group, while the placebo groups showed little or no gain. Between-group differences favored the reserpine group to a significant degree in all subtests except Similarities and Block Design. Although Group I consistently made greater gains than Group II, the changes on reserpine made by these groups were more comparable on the Wechsler-Bellevue Scale than any other measures used in the study. The Vocabulary subtest showed the greatest improvement after reserpine therapy and Similarities showed the smallest gain.

Rorschach.—Klopfer's Rorschach Prognostic Rating Scale (RPRS) was applied as a measure of the patient's ego strength and potential for psychotherapy. Both reserpine and placebo group made intra-group gains in the total score ($t = 3.01$ and 1.61) during the first seven weeks whereas neither group showed any appreciable gain during the second seven weeks. Between-group differences favored the initial reserpine group, but the differences in gains between drug and placebo treatment were not sufficient to be statistically significant. Most of the change in total RPRS score was caused by changes in the color component.

General Conclusions

1. Psychological variables play an important role in determining the effect of reserpine therapy. This is shown by the wide range of individual reactions to the drug as well as the fact that groups receiving reserpine after having been given placebo consistently made smaller gains than those treated with reserpine initially.

2. Although individual psychotic patients may react unfavorably to reserpine there is a tendency for groups to show a beneficial effect. This generally positive reaction is shown consistently in the psychiatric ratings, tests of intellect, and the Rorschach interview.

3. The effects of reserpine seem to be temporary. This is indicated by the fact that on all measures patients switched from reserpine to placebo tended to revert in the direction of their pre-reserpine behavior.

AN ANALYSIS OF THE VERBAL CONTENT OF PSYCHOTHERAPY

by HAROLD LLOYD BEST*

Psychotherapy has been a stimulating subject for both the popular and scientific writer. Tomes have been written on the subject of the processes involved; conjecture, speculation, and talk have been rampant; but only a few objective, experimental studies have been conducted in this area. In the specific area of the verbal processes, the number of experimental studies diminishes even further. This lack is not due to disinterest on the part of investigators, but rather to the research difficulty to be faced in an area replete with undefined variables interacting in a complex and changing variety of ways. While this in itself might not deter the exploratory researcher, the paucity of well founded measuring tools capable of establishing some meaningful order in this variable chaos acts as the final discourager.

In an effort to illuminate a small segment of this area of confusion, this exploratory study was undertaken. A sample of 22 recordings of early stage psychotherapeutic interviews was collected. The patients involved were all classified as adult neurotics by their therapists. The therapists were of differing orientation, professional affiliations, and levels of experience. However, they were all in practice in the Washington, D. C.-Baltimore geographic area, and all but two of them were employed in a clinical facility. The participating therapists, after having recorded a patient interview, responded to a series of 27 patient statements (card series) taken from an earlier study by Strupp (25).

The therapists' responses in both the recorded and card series procedures were classified according to the Strupp modification (25) of the Bales *Interaction Process Analysis* method (3). The recorded interviews were also timed at three minute intervals, the number of statements made by the therapist during these intervals being noted. The therapists were classified into experienced, inexperienced, Rogerian, and psychoanalytically oriented subgroups, and these subgroups were statistically compared for differences within scoring categories for all treatments, other than the time interval analyses. A cross-treatment comparison between the therapists' recorded and card series responses was also made in the same manner. The total card series response distribution was compared in the same manner to a similarly derived distribution made available by Strupp (25). In dealing with the timed recordings, the number of statements made by the therapists in equivalent 30 minute interviews was compared for the various subgroups.

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All subgroup comparisons were statistically analyzed by means of a t-test design. The .02 level was designated as the level for the rejection of the hypothesis of no difference.

The analysis of therapists' recorded responses furnished an operational description of the verbal content of psychotherapy. Therapists made major use of interpretation, permissiveness, exploratory questions, and reflection in that order of preference. Used far less frequently were structuring statements, reassurance, passive rejection, and antagonism.

The subgroup comparisons contributed various bits of information to the total picture:

1. Both Rogerians and psychoanalytically oriented therapists devoted more than 25 per cent of their communication to interpretation.

2. Both experienced and inexperienced therapists devoted more than 25 per cent of their communication to interpretation.

3. Rogerians used significantly more reflection and permissiveness than did psychoanalytic therapists.

4. Psychoanalytic therapists used significantly more structuring and reassurance than did their Rogerian colleagues.

5. Experienced therapists used significantly more interpretation and exploration than did the inexperienced therapist.

6. Inexperienced therapists used significantly more structuring and reassurance than did the more experienced therapists. However, this conclusion has to be accepted with caution because of the low cell frequencies involved.

7. Inexperienced Rogerians used significantly more reflection and reassurance than did the experienced Rogerians.

8. Experienced Rogerians used significantly more interpretation than did the inexperienced Rogerians.

9. Inexperienced psychoanalytic therapists used significantly more structuring than did the more experienced psychoanalytic therapists.

10. Experienced psychoanalytic therapists used significantly more reassurance than did the less experienced psychoanalytic therapists.

11. Experienced Rogerians used more reassurance and interpretation than did experienced psychoanalytic therapists.

12. Experienced psychoanalytic therapists used more factual and exploratory questioning than did experienced Rogerians.

13. Inexperienced Rogerians used more permissiveness, exploration, reflection, and reassurance than inexperienced psychoanalytic therapists.

14. Inexperienced psychoanalytic therapists used significantly more structuring and interpretation than inexperienced Rogerians.

An overview of these results provided several interesting conclusions:

1. Rogerians and psychoanalytic, experienced and inexperienced therapists used a surprisingly great amount of interpretation in the early stages of therapy despite orientational and theoretical frames that frown upon

therapeutic verbal behavior of this form during this period in therapy.

2. Inexperienced Rogerians confined themselves more to reflective responses advocated by their orientation than did the experienced Rogerians. With the growth of experience, the Rogerians deviated radically from their formal discipline by outdoing even the experienced psychoanalytic therapists in their use of interpretation, which is commonly considered a psychoanalytic response. The experienced analysts also deviated by using significantly more exploration than the Rogerians, this response form being generally considered Rogerian.

3. In comparing the two orientations on the inexperienced level, it was shown that each group adhered to their own particular theoretical frame: the inexperienced Rogerians were more permissive, exploratory, and reflective; the inexperienced psychoanalytic therapists were more interpretive and structuring. This is, of course, in comparative rather than absolute terms, and does not invalidate the conclusion that the Rogerians used far more interpretation than was expected.

4. The over-all conclusions to this survey of results are that with experience both orientations adopted the verbal forms generally associated with the other orientation. At the inexperienced level, both orientations adhered to their own orientational forms to a relatively strong degree.

The comparisons of the various subgroups in terms of the number of responses made in an equivalent 30 minute recorded interview yielded negative results for all but one analysis. The experienced Rogerians had responded significantly more than the experienced psychoanalytically oriented therapists to make this exception. Since it was found in the analysis of the recorded interview in terms of Bales Categories that both experienced groups deviated quite radically from their orientationally defined verbal forms, it becomes impossible to interpret the difference in the number of responses in terms of orientational theory. That experienced Rogerians respond with greater frequency than experienced analysts is therefore offered as a bit of information relative to the description of the verbal behavior exhibited by therapists rather than as a link in a theoretical chain.

The comparisons of responses to the card series is of only secondary importance in this study. Interested readers are referred to the work of Strupp (25). The results of this section of analysis showed the Rogerian to be more reflective and less permissive and structuring in his verbal approach. Also the experienced therapist was more interpretive and reassuring and less exploratory and reflective than his less experienced colleague. There was no important difference between the experienced and inexperienced Rogerian group. While it might be said from these results that the experienced therapist is more analytic and the inexperienced more Rogerian in verbal form, the expediency of accepting conclusions based on card series results in this study depends on the acceptance

of the card series model as a stimuli tool equivalent to the recorded interview model. Since the analyses to follow did not corroborate this equivalency, conclusions from these comparisons pertinent to the remainder of this study cannot be made.

A comparative analysis of the distribution of card series responses obtained independently by this investigator and by Strupp (25) disclosed two categories with significantly different proportions. The Strupp distribution contained a significantly greater proportion of reflective responses and a significantly smaller proportion of interpretive responses than was found in this study's comparable distribution. The implications of these findings become clearer when the respondents making up the two samples are compared. While only 18 per cent of Strupp's sample were Rogerian therapists, 42 per cent of the sample in the current study were of Rogerian discipline. It would be predicted from the sample components that the differences would be in the reverse direction from the results as found. Strupp's sample should have contributed more interpretation and less reflection according to theory. Two conclusions are suggested by these findings. The card series may be unreliable; the theoretical response frame for therapists is not followed in practice. It is believed that a combination of both these discrepancies exists. Other analyses reported here cast suspicion upon the equivalence of theoretical and actual communication frames. Also the reliability of the card series model has never been demonstrated.

The analyses comparing the response distributions of the recorded and card series models demonstrated that the number of significant differences in terms of the scoring categories which existed between the various distributions tested was so great that the two models must be held as dissimilar. The comparison of the total response distributions contributed by the same therapist for both these tools showed significance in seven of the nine categories. The distributions of experienced, inexperienced, Rogerian, and psychoanalytic subgroups tested in a like manner also yielded significance in multiple scoring categories. A statement of the dissimilarity of these two models is justified on the basis of this evidence.

EXPERIMENTAL *SCHISTOSOMIASIS MANSONI* IN MICE MAINTAINED ON NUTRITIONALLY DEFICIENT DIETS

by WILLIAM BRADLEY DEWITT*

The work reported in this thesis was undertaken to determine under controlled experimental conditions the effects of certain nutritional deficiencies on *Schistosoma mansoni* infections in mice. The investigation was stimulated by field observations on the part of Doctor Willard H. Wright that the symptomatology of schistosomiasis varies considerably in different areas and in different parts of the world. It was thought that some of the difference in pathology could be attributed to variation in diet of the populations in these areas. Since *S. mansoni* infections are so closely associated with the liver, it was decided to investigate the effects of nutritional deficiencies that are known to produce liver damage.

Two semi purified deficient diets, made available by Doctor K. Schwarz of the Laboratory of Biochemistry and Nutrition, National Institutes of Health, formed the basis of the experiments herein reported: a high-fat diet, deficient in choline and methyl group precursors that produces a fatty liver, and a diet based on *Torula* yeast, deficient in vitamin E, cystine, and an incompletely identified nutritional factor designated Factor 3. The *Torula* yeast diet is known to produce degeneration of parenchymal liver cells of the rat resulting in necrosis which is usually rapidly followed by death. The control animals were kept on a "complete" casein ration.

In the first experiment with the fatty-liver diet, the mice did not survive long enough to allow sufficient time for development of the parasite. For this reason, further studies were not undertaken with the fatty-liver diet. The *Torula* yeast, or basal diet, in the past had been used almost exclusively in experiments with rats. Thus, it was necessary to evaluate its effects on the uninfected mouse at the same time that its effects on the host-parasite complex were studied.

Male F1 progeny from the cross between female BALB cAnN and male DBA 2JN strains of mice were used throughout the study. Starting at term, the mothers were provided with a diet restricted in vitamin E until the young were weaned at 4 weeks. The mice were housed in individual wire mesh bottom cages in a room with constant temperature of 23 to 25° C. Weights were recorded once weekly. Water and diets were given *ad libitum*. The diets were prepared in dry form and fed in glass cups. A Puerto Rican strain of *S. mansoni*, maintained in the

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Laboratory of Tropical Diseases since 1949, was used. The mice were exposed to approximately 150 cercariae each by immersion of the tail, either at the time of weaning or after they had been on the experimental ration for 4 weeks. For the sake of convenience, the results of this study were presented in sections. In the first section, the effects of the basal diet, and the effects of the basal diet supplemented with Factor 3 or with cystine and vitamin E on the uninfected mouse were compared with the effects of a complete control diet. The second section dealt with the effects of the same diets on the infected mouse, and the third section presented the effects of the diets on the parasite.

Effects of the Deficient Diets on Uninfected Mice

In 4 different experiments, death occurred to all animals on the basal diet between the 39th and 96th day. The averages of the survival times of groups ranged between 65 and 70 days. Depending mainly on the length of survival, animals on the unsupplemented basal diet showed one or more profound changes at autopsy. Those dying between the 38th and 50th day showed extensive heart lesions characterized by myocardial degeneration and necrosis. The lesions were progressively more extensive with prolongation of survival. The incidence of myocardial lesions ranged from 80 to 96 per cent. The early picture was characterized by occasional, whitish-opaque streaks randomly distributed throughout the myocardium. In the advanced stages, more than 50 per cent of the heart muscle was lost. The heart was frequently enlarged. The heart valves and endocardium were normal in appearance.

Animals dying after 50 to 72 days had necrotic degeneration of the liver as well. The liver lesions ran a progressive course, but did not produce the acute terminal breakdown seen in the rat. The incidence of liver lesions in the mice on the basal diet was 54 per cent. If the animals survived longer than 68 to 70 days, skeletal muscle degeneration (muscular dystrophy) and kidney lesions occurred with almost 100 per cent incidence. The skeletal muscle lesions were widely distributed, and the kidney lesions were mostly bilateral. In addition, histological changes were present in the pancreas. These were characterized mainly by marked loss of acinar cells.

Animals on the Factor 3 supplemented basal diet survived a period of 129 days, at the end of which they were killed for autopsy. All pathological changes were found to be completely prevented by the supplement. Similarly, supplements of cystine plus vitamin E gave complete protection.

Food consumption of the mice on the basal ration was about one-third more than that of the mice on the control diet during the first several weeks, and thereafter it dropped off rapidly until by the end of the 10th week it was about one-third less. Water consumption by the mice on the basal diet was also found to be altered. Between the 3d and 8th week,

the basal-diet mice drank 3 to 4 times as much water as the control-diet mice. After the 8th week, the water consumption of the mice on the basal diet rapidly returned to the control level.

In animals on the basal diet, growth ceased after approximately 4 weeks. By the 8th week, such animals showed a total average weight gain of 7.4 g, as compared with 14.7 for animals on the control diet. Supplementation of the basal diet with Factor 3 produced a suboptimal, but steady growth rate throughout the period of observation. A similar, but more pronounced effect was obtained with supplementation of the basal diet with cystine and vitamin E.

Electrophoretic patterns obtained by paper electrophoresis showed alterations in the serum protein components of the mice on the basal diet. After the mice were on the diets for 70 to 75 days, the basal-diet mice showed the following alterations in absolute values: total protein 11 per cent decrease, albumin 20 per cent decrease, alpha globulin 11 per cent increase, beta globulin 20 per cent increase, gama globulin 50 per cent decrease, and A/G ratio 20 per cent decrease.

In regard to the mean level of the total protein, as well as the relative concentration of the various protein components of blood serum, mice on the supplemented basal diets were not significantly different from mice on the control diet.

The coagulation of blood from mice on the basal ration was found to be retarded. Basal-diet animals had an average coagulation time of 5.5 ± 0.11 minutes as compared with 2.7 ± 0.06 minutes for mice on the control diet. The prothrombin time was 26.4 ± 2.3 minutes for basal-diet animals and 12.1 ± 0.4 minutes for controls; while fibrinogen levels were found to be 0.330 ± 0.007 and 0.193 ± 0.012 g per cent respectively.

The Effects of the Deficient Diets on Infected Mice

Infected mice maintained on the unsupplemented basal diet showed pathological changes that were consistent with those found in uninfected mice maintained on the same diet. In addition, lesions due to the parasite appeared in the liver and in the intestinal tract of some animals, depending mainly on how far the deficiency had progressed before the parasite was introduced into the mouse. When the animals were allowed to become deficient, none of the cercariae developed into sexually mature worms during the 50- 55-day observation period following exposure. If the animals were infected before they were sufficiently depleted, some of the worms attained apparent sexual maturity, however, they did not reach full adult size. Thus, the underdeveloped and in most cases sexually immature worms did not produce pathological lesions at all comparable to those found in control-diet mice.

In mice on the basal diet, infection with *S. mansoni* produced little or no change in total serum protein levels or the relative distribution of the various components. Infected mice on the control diet showed an increase in total protein, primarily reflecting a sharp increase in alpha and beta globulin. The A/G ratio fell to 0.7 from a normal ratio of 1.5. Infected mice maintained on the supplemented basal diets presented essentially the same serum protein picture as the infected mice on the control diet.

In food utilization studies, it was found that the ability of infected mice on the control diet to digest and absorb dietary fats and proteins was impaired. Studies on the effects of the deficient diets on the utilization of dietary fats and proteins were prevented by the fact that adequate fecal samples could not be collected, since the feces of these animals were frequently quite soft and the mice were passing large volumes of urine.

The growth rate of infected mice was about the same as that of uninfected mice maintained on comparable rations until 6 or 8 weeks after exposure. From this point on, the infected mice showed a steady weight loss relative to the weight of uninfected mice.

The time required for the coagulation of blood from mice maintained on the basal ration for 55–70 days and infected with *S. mansoni* for 40–50 days was not significantly different from that of blood from uninfected mice maintained on the same diet. For comparable mice on the control diet, the infected mice had coagulation times that were on the average about twice as long as those of uninfected mice. The mean prothrombin time for infected mice on the basal diet was not significantly different from that of the uninfected mice. With control-diet mice, however, *S. mansoni* increased the prothrombin time. The fibrinogen levels of mice on the basal as well as those on the control diet were not altered when the mice were infected with *S. mansoni*.

The Effects of the Basal Diet on *Schistosoma mansoni*

The basal diet used in this study had a profound effect on the survival and development of *S. mansoni* in mice. Based on the number of worms recovered from the mice during the 8th week after they were exposed to a standardized infection, on the average the basal-diet mice harbored 69 per cent more worms than the mice on the control diet. The supplementation of the basal diet with either cystine and vitamin E or with Factor 3 gave results comparable to those obtained with the control diet.

Microscopic examination of "adult" *S. mansoni* recovered from mice on the basal ration revealed that somatic development was markedly impaired and that most of the worms did not attain sexual maturity. It was found that in female worms the length of the worm posterior to the ovary was more severely affected than that anterior. The anterior por-

tion of the basal-diet worms was only 10 per cent shorter, whereas the posterior portion was 41 per cent shorter than in the female worms in control-diet mice. It was also observed that the eggs found *in utero* in the few sexually mature female worms recovered from mice on the basal diet were very darkly pigmented and highly granular, suggesting that the eggs were abnormal. Examination of male worms from the deficient mice showed them to be as severely stunted in growth and as underdeveloped sexually as the female worms.

In conclusion, it may be said that the basal diet, which is inadequate in vitamin E, Factor 3, and cystine, affects the parasite in at least two major ways: (1) by diminishing the natural resistance of the host so that a higher percentage of the larval stages of the parasite that penetrate into the tissues of the host are able to reach the portal blood vessels and survive, and (2) by creating an unfavorable *in vivo* cultural environment so that the parasite is unable to undergo normal development. Thus, this diet appears, on the one hand, to favor the parasite by lowering the natural resistance of the host and, on the other, to affect it adversely by interfering with its nutritional support.

On the basis of the findings reported in this thesis, it would appear that the nutritional state of human beings may very well be a determining factor in the severity of the symptomatology produced by schistosomiasis. The nutritional aspects of this problem certainly warrant further study, especially in light of the fact that vast numbers of people living in tropical and subtropical areas where schistosomiasis is endemic subsist on nutritionally inadequate diets.

EXPERIMENTAL COMPARISON OF THE EFFECTIVENESS OF ONE-SIDED AND TWO-SIDED MASS COMMUNICATIONS IN THE INFLUENCE OF ECONOMIC ATTITUDES

by EDMUND WINSTON JORDAN FAISON •

For many years advertising practitioners have attempted to influence public attitudes through mass communication media with one-sided arguments. Traditionally, they have presented only the positive arguments associated with the product.

In the field of personal selling, on the other hand, the two-sided argument is often considered to be an effective sales approach. Using the two-sided approach, the salesman presents both the positive and negative features of his product. With every negative argument, the salesman follows with a counterargument or offsetting positive argument.

Although it is recognized by advertisers that the two-sided approach is often effective in the field of personal selling, the consensus is that it is not sound to admit weak points when not in a position to defend them. Because this position is widely accepted, the two-sided approach is seldom used in any advertising which employs mass communication media.

In recent years, objective evidence has been obtained in the related fields of public opinion and propaganda which indicates that the two-sided arguments, under certain conditions, can be very effective even when one-way, mass media are used. The evidence from these fields indicates that the two-sided argument is more effective in influencing attitudes of: (1) higher intelligence groups; (2) groups initially opposed to the point-of-view presented in the communication; and (3) groups subsequently exposed to counterpropaganda.

The purpose of the present study was to determine the desirability of presenting two-sided advertising messages by means of mass communication media. Specifically, the effects of two-sided commercials were compared with the effects of one-sided commercials for different types of products, and for groups differing in age, intelligence, sex, and prior attitude. Both immediate and delayed effects of the communications were measured.

Four hundred and ninety-six vocational school, high school, and college subjects were exposed to three one-minute radio commercials about an automobile, a gas range, and a floor wax. Half of the subjects were exposed to one-sided commercials presenting only the positive features of the products (conventional commercials). The other half were exposed to comparable two-sided commercials which presented both posi-

• A.B. 1948, A.M. 1950, The George Washington University; Ph.D. conferred June 4, 1956. Professor in charge of research: Curtis Edward Tuttle, Associate Professor of Psychology.

tive and negative features of the products in relation to their competitors. Three tests of attitudes toward the products were administered: (1) a pretest just prior to the presentation of the commercials; (2) a post-test immediately following the commercials; and (3) a delayed test four to six weeks later.

The following general conclusions were drawn from the results:

1. In terms of over-all effectiveness, two-sided advertising communications seem to be an effective means of influencing economic attitudes. In the present study, the two-sided arguments for all three products were significantly superior in effectiveness to comparable one-sided mass communications in influencing attitudes.

2. Effectiveness of the two-sided advertising communications was dependent upon the intelligence level of the audience. Upper level subjects were more influenced by two-sided arguments; lower level subjects were more influenced by the one-sided presentations.

3. For audience members who were initially opposed to the point of view presented in the commercials (those who used competitive products), the two-sided arguments were superior. For those with a prior positive attitude (those who used the recommended products), the one-sided commercials tended to be superior.

4. The relative amount of influence of both one-sided and two-sided mass communications within an advertising framework seems to be related to the type of product being advertised. In the present experiment, the commercials concerning the least expensive product (floor wax) produced a much greater change in attitude than did the commercials for the most expensive product (automobile).

5. When the attitudes of the subjects were measured four to six weeks after the commercials were presented, neither the one-sided nor the two-sided arguments had shown diminishing effects. For those who were exposed to the two-sided commercials, there was a continuing increase in favorableness of attitude toward the products presented in the commercials. For the one-sided group, there was no significant difference in the attitudes as measured immediately after the commercials. Thus, the two-sided commercials were significantly more effective than the one-sided commercials in influencing attitudes after a time lapse of four to six weeks.

6. For both one-sided and two-sided commercials, the more knowledge a person has about a given subject the less influential will a particular communication be in altering his opinion.

A FACTOR STUDY OF DRIVERS' ATTITUDES

by LEON GEORGE GOLDSTEIN •

The purpose of this research was to determine the nature and number of dimensions underlying drivers' attitudes toward the various aspects of the driving activity. Four factors were hypothesized: (1) appreciation of hazard, (2) social responsibility or conformity, (3) attitude toward the vehicle, and (4) attitude toward speed. A 186-item attitude inventory was developed to measure the following 14 aspects of drivers' attitudes:

1. Speed
2. Others
3. Causes of accidents
4. Rules and regulations
5. Traffic controls
6. Driver limitations
7. Cops
8. Risk taking
9. "Good Driver" concept
10. The vehicle itself
11. Driver training
12. Responsibility
13. Passengers
14. Special driving conditions

Items were weighted +1 for the socially desirable response (as determined by opinions of 18 experts) and zero for undesirable response.

The Inventory was administered to 315 drivers, all of whom were known either to the investigator or to a friend or relative of the investigator, and all of whom lived in either the Washington, D. C., area or Philadelphia, Pennsylvania, area. After eliminating items with p-values beyond the .90—.10 split and items on which judges' agreement (as to the cluster to which the item belonged) was less than 5 out of 6, seven clusters remained for analysis: Numbers 1, 2, 3, 4, 7, 9, and 10.

A centroid factor solution was carried out on the intercorrelations among the seven clusters, and rotated to oblique simple structure. Four factors were identified rather clearly in the cluster space: (1) attitude toward speed, (2) attitude toward other users of the roadway, (3) attitude toward cops, and (4) attitude toward the vehicle. Factors 1, 2, and 3 are substantially correlated (r_{12}=.28, r_{13}=.54, r_{23}=.61). Factor 4 (vehicle) is nearly orthogonal to all the rest, with highest r=.16. A fifth factor seemed necessary in the solution, but is correlated highly with factors 1, 2, and 3; r_{15}=.66, r_{25}=.56, and r_{35}=.71. It was tentatively labelled "appreciation of hazard in driving" or just "care or concern for safety".

A second-order factorization was carried out on the intercorrelations among the five first-order factors, with results somewhat less than abundantly clear. There was one all-but-general second-order factor, and Factor 5 is a very good measure of it, with a loading of .91. It was clear that no more than two second-order factors are required to account

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tor the first-order inter-factor correlations, but the need or interpretation of the second factor was not clear.

The first-order rotated factor solution was extended to all 150 items by the method developed by Dwyer. In the item space, Factors 2 (others), 3 (cops), and 4 (vehicle) are quite clearly defined. Factor 1 appears here as not just speed but competitive speed. The complexity of Factor 5 is most apparent in the item space. Here many items have high weights on it, representing attitudes toward accident causality, toward rules and regulations, conformity, and responsibility. If this is indeed a single factor rather than 2 or 3 which were not delineated in this analysis, it appears to be a fairly general underlying feeling of "appreciation of the need for care in the driving situation"—or just carefulness.

In addition to responses to attitude items, each of the 415 drivers (246 men, and 69 women) was asked to indicate: (1) how many times he paid a fine for a moving violation, (2) how many accidents he had experienced while he was driving, and (3) in how many of these accidents he was at least partly at fault. The attitude cluster scores were correlated with these variables and the effect of miles driven (as reported by the driver) partialled out. For the women the speed cluster showed a significant (.05 level) correlation ($r = .31$) with violation rate, and the cops cluster showed significant correlations with accident rate ($r = -.26$) and with rate of accidents for which partly responsible ($r = -.27$); negative relationship indicating socially desirable attitudes associated with good violation and accident records. For the men, only one correlation was significant, causes of accidents cluster against accidents/responsible rate ($r = .15$), and in the unexpected direction. While nearly all the cluster criterion correlations were in the expected direction for the women, and generally for violation rate for the men, for accident rate and acc./resp. rate (highly correlated) they were generally in the reverse direction for the men. Because of unclear relationships between cluster scores and criteria, the factor solution was not extended to the criteria.

On attitude clusters 1 (speed) and 4 (rules and regulations), the women had significantly higher (.01 and .05 levels, respectively) mean scores than the men; on cluster 3 (causes of accidents), the men had a significantly higher mean score (.01 level). On 3 of the other 4 clusters the women appear somewhat better than the men, but not significantly so. It may be possible that men and women have somewhat different response sets, or somewhat different interpretations of the attitude items. Interpretations are somewhat befuddled by the great difference in miles driven by the two groups; the mean for the men is about 4 times the mean for the women.

It may be concluded that two of the factors hypothesized have been substantiated: (1) attitude toward the vehicle and (2) attitude toward speed—though it turns out to be competitive speed. The other two fac-

tors hypothesized, appreciation of hazard, and social responsibility or conformity, did not emerge as separate factors in this analysis, but seem tied in with a more general factor of care or concern for safety in the driving situation which underlies the correlations among 3 of the 4 factors that were identified. The other two factors which emerged (attitude toward others, and attitude toward cops) had not been hypothesized as factors.

The relationships of these attitudinal factors to performance on the highway are not clear from this analysis. It seems that violations may be more closely related to attitudes than are accidents, and the relationships may depend on sex differences and on the particular phase of driving experience. It would take longitudinal studies on large samples, however, to establish the directions and extent of effects of (1) attitude on performance and (2) experience on attitude.

THE EFFECTS OF SEVERAL AMINO ACID ANALOGUES ON THE PROPAGATION OF INFLUENZA A VIRUS IN TISSUE CULTURE

by WILLIAM DANIEL KUNDIN*

Chorioallantoic membrane of the chick embryo is the tissue most widely employed for the cultivation of the influenza virus. This tissue, however, has certain disadvantages if used in quantitative chemotherapeutic tests. It is extremely difficult to add uniform amounts of tissue fragments to a series of test tubes. It has also been shown that individual membranes vary markedly in their ability to support virus growth. In this investigation, the disadvantages inherent in the standard tissue culture procedures have been minimized by pooling a large number of chick lungs, and by mechanically dispersing them into a state in which they can be pipetted in relatively constant volumes.

In the search for chemotherapeutic drugs effective against the influenza virus, more than 850 compounds were tested. Drugs were tested in a system wherein the ability of the compound to inhibit the multiplication of the influenza A virus in dispersed chick embryonic lung tissue cultures was determined by dividing the maximum concentration non-toxic to tissue by the minimum concentration inhibitory to growth of the virus. In addition to the attempt to find compounds which might have possible chemotherapeutic applications, an effort was made to study the biochemistry of virus-host-cell relationships, including the mechanisms of cellular invasion, and the relationship between the host enzyme systems and the virus replicating centers during synthesis of new virus particles. It was felt that a study of metabolite inhibitors might afford some leads to the further understanding of virus-cell relationships. For these purposes we desired inhibitors so closely related in structure to the essential metabolite that they could fit the same enzyme, and sufficiently unrelated to be devoid of essential metabolic activity.

Since amino acids are the basic building blocks of cell proteins, emphasis was placed upon the testing and study of amino acid analogues.

Of 280 amino acids and amino acid analogues tested, six analogues were found to inhibit growth of the virus. They were β-phenylserine, norleucine, canavanine flavianate, allyl glycine, S-ethyl cysteine, and glycyl leucine. Three of these compounds, β-phenylserine, norleucine, and canavanine flavianate were studied rather intensively.

Inhibition by β-phenylserine (and β-phenylserine ethyl ester) was competitively reversed by phenylalanine, glycyl phenylalanine, alanyl phenyl-

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alanine, formyl phenylalanine, acetyl phenylalanine, and phenylpyruvic acid. Pyridoxal phosphate, α-oximino-β-phenylpropionic acid, and N (4-chlorophenoxyacetyl) L phenylalanine were also effective as reversing agents. N-Acetyl β-phenylserine was found to be biologically inert, even though acetyl phenylalanine was an effective inhibition-reversing agent.

Norleucine inhibition was competitively reversed by methionine, acetyl methionine, and glycyl methionine. When the inhibitory characteristics of norleucine were compared with those of other methionine analogues, it was found that compounds which reversed norleucine also reversed methoxinine and ethionine. Compounds which failed to reverse norleucine similarly failed to reverse methoxinine and ethionine. None of the metabolites were able to reverse methionine sulfoximine inhibition.

Canavanine flavianate inhibition was reversed by arginine. In further studies of the compound, it was found that canavanine was a weak virus inhibitor. Flavianic acid proved to be virucidal *in vitro*, but was ineffective in tissue culture. Thus although canavanine and flavianic acid were, separately, poor virus inhibitors, the combination of the two was indeed effective. The reason for the synergistic effect of this combination is not known. It may be due to sequential blocking, wherein two inhibitors act upon different enzymes within the same metabolic sequence, or it may be due to concurrent blocking, wherein two or more pathways concerned with the same end product are blocked. Canavanine flavianate was found also to be effective against the poliovirus by other investigators in this laboratory.

β-Phenylserine, norleucine, and canavanine flavianate were capable neither of altering the course of an influenza virus infection in mice, nor at the concentrations tested, of inhibiting the growth of the virus in embryonated eggs. None of the three compounds had any effect upon the adsorption of virus onto tissue cell surfaces. β-Phenylserine and norleucine were not found to be virucidal, nor was canavanine. Canavanine flavianate and flavianic acid, however, inactivated the virus on an equimolar relationship.

Of the remaining amino acids, allyl glycine and S-ethyl cysteine inhibition were both reversed by cysteine. S-Ethyl cysteine was reversed by methionine also, as well as by several other sulfur-containing compounds. Of all the amino acids tested during the course of this investigation, S-ethyl cysteine was the only one which was reversed by more than one amino acid.

Although no further tests were carried out with glycyl leucine, this dipeptide has been found by others to inhibit bacterial growth. It thus deserves further investigation as an inhibitor of virus growth.

Upon studying the competitive reversals of β-phenylserine, norleucine, canavanine, and allyl glycine, one feature was seen to stand out. In all four instances the reversal of virus inhibition was accompanied by a

simultaneous reversal of tissue toxicity. Furthermore, the toxicity and inhibition appeared to be reversed in parallel fashion, resulting in a relatively constant therapeutic index. The parallel reversals appeared to be in accordance with the law of mass action. This constancy of the therapeutic index may be due to a drug toxicity to the tissue so subtle as to be missed by casual microscopic examination of the tissue.

It is thought, however, that the therapeutic index of the virus-inhibiting analogues does indeed demonstrate a selectively greater sensitivity of the virus to the compound, a sensitivity which can be measured quantitatively. Because of the simplicity and similarity of structure between the amino acids and their analogues, it is suggested that all competitively inhibitory analogues of a given amino acid may act on one single step in the metabolic pathway of that amino acid.

A number of compounds other than amino acids were found to be effective against the influenza virus in tissue culture. Included were hydrazides, steroids, and 3,5-diiodo-4-hydroxybenzene sulfonamide.

Six hydrazides were found to inhibit the growth of the virus. They were hydrazine, benzoic acid hydrazide, anthranilic acid hydrazide, 2-methoxybenzoic acid hydrazide, m-nitrobenzoic acid hydrazide, and salicylic acid hydrazide. When anthranilic acid hydrazide was used as a test drug it was found to be equally effective against influenza A and B viruses in tissue culture. It was ineffective, however, in altering the course of an influenza virus infection in mice as well as in embryonated eggs. It did not affect the adsorption of virus to tissue. Virucidal tests yielded equivocal results. Hydrazine, however, was found to be virucidal. It is thus thought that the hydrazide moiety of these compounds is the active component and that the benzoyl ring serves as a means of transport. Hydrazine is known to be an enzymatic poison in other biological systems.

3,5-Diiodo-4-hydroxybenzene sulfonamide was an effective virus inhibitor in tissue culture, equally effective against both influenza A and B. It was not effective against the influenza virus in embryonated eggs and in mice, nor did it affect the adsorption of virus to tissue. The compound was found to be a virucide. Inhibition was not reversed by thyroxine or thyroxine precursors. It is thus thought that inhibition of the virus was due to the extracellular inactivation of the virus in tissue culture.

Eighty-eight steroids were tested to determine their effect upon the growth of the influenza virus. A number of them had limited effect upon the virus. Eight steroids were reasonably inhibitory. In general they were unsaturated in the 4-5 position, and had a polar group in the 3 position of the A ring, and hydroxyl ion at C-17. The C-11 position did not appear to be important. 17-α-Hydroxy progesterone was used as a test drug. It was ineffective against the influenza virus in embryonated

eggs and in mice, and did not affect the adsorption of the virus to tissue. It had no virucidal activity. It is suggested that the drug may act by an effect upon cell permeability.

CHARACTERIZATION AND QUANTITATIVE MEASUREMENT OF PART OF THE URINARY PENTOSE FRACTION IN THE RAT WITH REFERENCE TO THE INFLUENCE OF THYROID ACTIVITY AND COLD

by DAVID WALKER LUM*

Studies previously conducted in this laboratory had indicated that cold and thyroid feeding increased the excretion of pentoses in rat urine while feeding thiouracil decreased urinary pentoses. The pentoses were determined as total free pentose by the *p*-bromoaniline method, which is most sensitive to the aldopentoses, but only slightly sensitive to the ketopentoses and the heptuloses. The information presented in this thesis covers adaptation of techniques to the quantitative separation of the aldopentoses from the ketopentoses and the heptuloses and to the determination of the aldopentoses individually.

A modification of the Majbaum orcinol method was developed for the colorimetric determination of pentose. The method employed a mixture of hydrochloric and acetic acids which permitted the color to be developed at a lower temperature (80° C.). In this procedure there is less decomposition of the orcinol and sugars and also less interference from non-pentose substances. The modified method had the added advantage of requiring less solution for analysis. Excellent agreement with Beer's law was obtained.

For the quantitative separation of the aldopentoses present the tetraborate derivatives of the urine carbohydrates were separated by ion exchange on a Dowex-1 column. Paper chromatograms of the orcinal positive fractions indicated the presence of ribose and arabinose. Daily quantitative determinations were carried out for ribose and arabinose in these fractions, as well as for total pentose in the unfractionated urine samples.

In preliminary experiments it was shown that increasing the carbohydrate content of the diet had no significant effect on the excretion of total pentose in the rat. On the other hand increasing the protein content of the diet caused the total pentose excretion to increase about 30 per cent. This effect of the high protein diet does not seem to be directly related to the protein content of the diet as the protein content was increased over 300 per cent. It seems more likely that this effect is related to the specific dynamic action of high protein meals, which are known to increase the basal metabolic rate as much as 30 per cent.

It was shown that feeding of a diet containing 2 per cent thyroid

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powder to rats caused a significant increase in both the ribose and arabinose in the urine. When the animals were returned to the standard diet the urinary pentose levels returned to normal within five days. A decrease in urinary ribose and arabinose was observed when rats were placed on a diet containing 2 per cent thiouracil, a thyroid depressant, and again the urinary pentose levels returned to normal when the animals were given standard diet to eat at will. It was noted, however, that the group of animals placed on the diet containing thiouracil did not eat normally, and that the decreased excretion of pentoses could be maintained by restricting their dietary intake to four grams of standard diet per day.

The thyroid gland is known to play an important role in the regulation of basal metabolic rate (BMR); hyperactivity of the thyroid causes an increase in BMR while decreased thyroid activity causes the BMR to decrease. A possible explanation for the observed increase or decrease in ribose and arabinose excretion could therefore be found in the action of these substances on the BMR.

It was observed further that total pentose excretion increased significantly upon exposure to cold but the ribose and arabinose fractions increased only slightly. However, when the animals were removed from the cold both the total pentose and the ribose and arabinose fractions showed highly significant decreases. These data would again suggest that ribose and arabinose excretion in the rat are related to BMR. The inability to obtain the marked increase in total pentose excreted, as previously observed in this laboratory, has been attributed to either strain differences or the fact that the animals did not eat normally in the cold.

EXPERIMENTAL CHEMOTHERAPY OF PR8 STRAIN OF INFLUENZA A VIRUS WITH PARTICULAR REFERENCE TO THIOSEMICARBAZONES AND DIPHENYL AND RELATED COMPOUNDS

by GERTRUDE SHEVA LUM*

Since the large viruses are now classed with the bacteria, there is no well-authenticated record of effective chemotherapy of any virus disease. The problem involves the intimate relationship between virus and host cell, and thus any compound interfering with viral development is likely to affect the host as well. However, any compound which inhibits the propagation of the virus may lead not only to effective chemotherapy but also to an understanding of the dynamics of the virus-host cell relationship. This approach in turn may further the study of normal cell metabolism. It is with such interests that this study for anti-influenza compounds was undertaken.

Since tissue cultures are of particular value for the preliminary evaluation of the capacity of a substance to influence viral growth, a modification of chorioallantoic membrane tissue culture, with the fragments grown directly on the glass, was used throughout this study. This offers a further advantage of direct microscopic observation of cell growth. Influenza virus does not exert a cytopathogenic effect, therefore, toxic effects of drugs were easily discernible. Since it is known that this virus multiplies only in the endodermal layer of the membrane, fibroblastic growth was not used as a criterion for viral inhibition. Only those tubes with tissue fragments surrounded by an endodermal sheath were considered positive, and fluids from positive tubes were tested for presence of hemagglutinins.

Of 568 compounds tested against 100 EID_{50} of PR8 strain of influenza A virus, 12 were found which exhibited a therapeutic index (the ratio of the maximum non-toxic concentration of drug to the minimum inhibitory concentration) of 8 or more. These compounds included 6 diphenyl and related compounds, bis-(4-guanidinophenyl)methane sulfate, bis-(4-guanidinophenyl)sulfide, p,p'-diaminodiphenyltrichloroethane, 4-nitrodiphenylamine, 2-carboxy-4-hydroxydiphenylmethane, and α,α'-dipyridyl; 4 thiosemicarbazones, p-nitrobenzaldehyde-3-thiosemicarbazone, p-hydroxybenzaldehyde-3-thiosemicarbazone, α-amylcinnamaldehyde-3-thiosemicarbazone, and anisaldehyde thiosemicarbazone; the aliphatic compound, n-decylguanidinium sulfate; and a pyrimidine analog, 1,2,3,6-tetrahydro-6-amino-1-(2-methoxyethyl)-4-methyl-2-thioxo-5-pyrimidine carbonitrile.

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These compounds could presumably inhibit the virus by directly acting on the virus, by interfering with one or more of the processes involved in multiplication, or by preventing the release of virus from the cell. Some of these possibilities were investigated.

None of these 12 compounds prevented the agglutination of chick red blood cells, for hemagglutination occurred when virus was added to the fluids.

The degree of inhibition of all these inhibitors was found to be a direct function of the inoculating dose of virus, increasing as the inoculum decreased.

To determine whether the drugs act directly on the virus, the maximum non-toxic concentration of each of the compounds was incubated with the virus in the absence of tissue. None of the drugs exerted a virucidal effect, and two, *p,p'*-diaminodiphenyltrichloroethane and 2-carboxy-4-hydroxydiphenylmethane, exerted a stabilizing effect with infectivity titers showing no drop after incubation as compared to the controls.

Experiments were conducted to determine how long after infection the drugs would remain effective in preventing multiplication of the virus in tissue culture. *n*-Decylguanidinium sulfate was not effective therapeutically for virus appeared when the drug was added 0.5 hours after infection. Bis-(4-guanidinophenyl)sulfide and *p*-nitrobensaldehyde-3-thiosemicarbazone were effective up to 3 hours after infection; *p,p'*-diaminodiphenyltrichloroethane and 2-carboxy-4-hydroxydiphenylmethane were effective up to 8 hours; bis-(4-guanidinophenyl)methane sulfate, α,α'-dipyridyl, and α-amylcinnamaldehyde-3-thiosemicarbazone were effective up to 20 hours; *p*-hydroxybenzaldehyde-3-thiosemicarbazone was effective up to 24 hours; 4-nitrodiphenylamine and anisaldehyde thiosemicarbazone were effective up to 30 hours; and the pyrimidine analog was effective up to 36 hours after infection. The evidence suggests that the drugs are active at an intracellular level and prevent infection at late stages of the multiplication process.

It has been shown that the virus is located intracellularly within 30 minutes after infection. On this basis an experiment was designed to determine whether the inhibitors act by interfering with the adsorption of the virus. Virus was not detectable in the fluids in the presence of any of these drugs after 30 minutes incubation; therefore, this could not be considered as a possible mode of action.

The action of these drugs on the release of virus from the infected cell was then tested, but in the case of all the drugs there was less virus in the treated tissues than in the untreated controls.

The possible action of the drugs by an effect on the respiration of the tissue was then studied by determining the pH of the fluids of tissue cultures containing the drug. No difference was observed between infected

and uninfected fluids, and none of the drugs was found to inhibit the respiratory activity of the tissue.

The growth rate for the virus was determined by inoculating 100 and 10,000 EID_{50} into tissue cultures, incubating for various intervals up to 72 hours, and titrating the fluids both in eggs and in tissue cultures. The procedure was repeated, titrating in tissue culture, after a two-month interval. The growth curve determined by these studies was similar to that obtained for small inocula by other workers. The curves were quite similar for the two viral dilutions tested. Since eggs are known to be more sensitive indicators of the virus, the finding of a shorter latent period and a higher titer in eggs as compared to tissue cultures was anticipated. The titer of 10^{-6} in tissue culture, however, made this simpler method more practicable for testing the effect of the inhibitors on the growth rate. All the inhibitory drugs prolonged the latent period from 4 hours longer with *p*-nitrobenzaldehyde-3-thiosemicarbazone and bis-(4-guanidinophenyl)methane sulfate to 36 hours longer with α-amylcinnamaldehyde-3-thiosemicarbazone and 4-nitrodiphenylamine. The prolonged latent period further substantiates the intracellular action of the drugs. The diphenyl and related compounds decreased the viral titer by more than five log units after 36 hours' incubation and by more than 3 log units after 72 hours; the thiosemicarbazones reduced the titer approximately four log units after 36 hours and more than 3.5 log units after 72 hours; *n*-decylguanidinium sulfate and the pyrimidine analog reduced the titer by more than four log units after 72 hours. These data in most cases correlate with the results in the experiment on the therapeutic effect of the drugs.

In an endeavor to determine any particular synthetic or metabolic process involved in the action of the inhibitors, reversal of the inhibition was attempted with naturally-occurring metabolites. To a fixed inhibitory concentration of drug was added serial dilutions of the metabolite, beginning with the previously-determined maximum non-toxic or non-inhibitory concentration. Bis-(4-guanidinophenyl)methane sulfate was reversed by arginine but not by the citrulline cycle compounds or lysine. Therefore the mere presence of an end amino group was not sufficient for reversal. The guanido grouping seems essential because creatine, guanidine, and guanidoacetic acid were effective, but the imino grouping was not essential because urea also was antagonistic. Whether the adenine ring was broken and its breakdown products became effective cannot be explained from the available evidence. Bis-(4-guanidinophenyl)sulfide was reversed by the same compounds and also by glutathione and compounds containing a minimum dipeptide grouping, while corresponding amino acids were negative. This suggests the inhibition of peptide formation or a possible inhibition of energy as the mechanism of action of this compound. Some vitamins were also antagonistic as well as α-alanine and

glutamic acid, suggesting an interference with vitamin or respective cofactor synthesis. *p,p'*-Diaminodiphenyltrichloroethane was not reversed by any of the metabolites tested. Cozymase reversed 2-carboxy-4-hydroxydiphenylmethane and α,α'-dipyridyl, but niacin was not effective. The latter compound does not act through the inhibition of the cytochrome system since methylene blue was not an effective reversing agent. 4-Nitrodiphenylamine was reversed by cozymase and niacin and this compound possibly exerts its effect by interfering with the formation and or function of cozymase. The four thiosemicarbazones were reversed by coenzyme A and pantothenic acid, but not by α-alanine; therefore, the synthesis of the pantoic moiety, formation of coenzyme A, or its action is the suggested mode of action of these compounds. *n*-Decylguanidinium sulfate was reversed by compounds similar to those reversing bis-(4-guanidinophenyl)methane sulfate, and it is possible that its mechanism is also similar. The reversal by methionine is not explainable by these data.

The inhibition of the action of *p*-hydroxybenzaldehyde-3-thiosemicarbazone by pantothenic acid seems to be competitive with a ratio of approximately 1:120,000. There was no quantitative relationship between the other classes of inhibitors and antagonists tested.

Subacute chronic toxicity tests of nine of the effective compounds were done in mice. The maximum mouse-tolerated doses of drug thus determined were fed in the diet of the animals, beginning 24 hours before infection in the chemoprophylactic experiment, and beginning 24 hours after infection in the chemotherapeutic experiment. Bis-(4-guanidinophenyl)methane sulfate, bis-(4-guanidinophenyl)sulfide, *n*-decylguanidinium sulfate, and anisaldehyde thiosemicarbazone allowed 50 per cent or more survival of mice infected with 100 per cent lethal dose of influenza A virus in the chemoprophylactic experiment. These compounds were as effective in the chemotherapeutic experiment, except bis-(4-guanidinophenyl)sulfide which was effective for only 25 per cent of the mice. These four compounds were also active against influenza B virus in mice to the extent of 37.5 per cent survival. *n*-Decylguanidinium sulfate was least effective in the therapeutic experiment in tissue culture and was most effective therapeutically in mice. Other workers have found this same discrepancy between various host systems.

The possibility of an increased, or synergistic, effect of the drugs when tested in combination was investigated. Such an approach may involve several aspects. First, it is necesary to determine the possible enzyme or particular metabolic system upon which either drug acts most strongly. If an alternate pathway is possible, both must be blocked. Second, if one drug is capable of suppressing a critical protein-synthesizing enzyme system, the other may, *e.g.*, suppress critical oxidative enzyme systems of carbohydrate metabolism. In this study the combinations of drugs were

determined by the information on the metabolic pathways and dissimilarity of chemical structure; thirteen combinations were tested. All the combinations exhibited less activity than either of the drugs alone, except *p,p'*-diaminodiphenyltrichloroethane and the thiosemicarbazones. *p,p'*-Diaminodiphenyltrichloroethane with α-amyleinnamaldehyde-3-thiosemicarbazone, *p*-hydroxybenzaldehyde-3-thiosemicarbazone, and anisaldehyde thiosemicarbazone increased the therapeutic index of the thiosemicarbazones four-fold, and *p*-nitrobenzaldehyde-3-thiosemicarbazone increased two-fold in tissue culture. There was also very slight enhancement of activity of anisaldehyde thiosemicarbazone when fed to mice along with *p,p'*-diaminodiphenyltrichloroethane. The activity of these inhibitors in mice indicates further animal study.

THE EFFECT OF CORTISONE AND FASTING ON THE CARBOHYDRATE, POTASSIUM, AND SODIUM LEVELS OF THE LIVER IN INTACT AND ADRENALECTOMIZED MICE

by JOSEPH JAMES MARTORANO*

Changes in the glycogen content of the liver have generally been considered to be the result of changes in the carbohydrate supply of the body. Recent work, however, has demonstrated that the accumulation of glycogen and its disappearance from the liver cannot be explained entirely by the mobilization and storage of available carbohydrate material.

The importance of cortico-adrenal tissue in the utilization and storage of carbohydrate has been demonstrated. This endocrine factor is also known to influence electrolyte distribution in the body to such an extent that concepts of "essential" adrenal cortical activity have wavered between glycogen formation and electrolyte distribution. In this connection there are a number of indications that potassium transfer and carbohydrate metabolism have an intimate association. Thus it has been suggested that glycogen deposition in the liver is accompanied by a concomitant deposition of potassium and water. In this connection Fenn and his co-workers reported a fixed concentration of potassium and water in the liver at all glycogen levels.

The problem was to determine whether such a parallelism exists. In addition, since potassium changes in the sera are known to affect sodium levels in that fluid, liver sodium was measured along with liver potassium in order to ascertain whether a similar relationship existed in this tissue. The problem was further extended to determine whether the relationship of glycogen, potassium, and sodium was the same in those animals where glycogen deposition resulting from a pure protein diet (vitamin-free casein) or induced by increased adrenal cortical activity (gluconeogenesis) as that in intact mice fed a balanced diet (glycogenesis).

Preparation of tissues for glycogen determination was based on the procedure of Pfluger (92) as modified by Good, Kramer, and Symogyi (93). Determinations of liver carbohydrate were made with Dreywood's anthrone reagent (9-10-dihydro-9-oxoanthracene). The procedure followed was that recommended by Seifter *et al* (100).

Swensson (89) reported that liver glycogen levels are affected by the method of sacrifice. In general, two methods of killing are reported in

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the literature: decapitation and narcosis. Both of these methods have been reported to cause postmortem glycogenolysis. In an effort to reduce this postmortem depletion, it was decided to determine whether sacrificing these small animals by snapping the spinal cord might not reduce this effect. Groups of mice were sacrificed either with nembutal, amytal, or snapping the spinal cord. A comparison of the three methods indicated that the mean liver glycogen of the group in which the spinal cord was snapped was higher, although the difference was not of statistical significance. This method of sacrifice was used since it was faster and more economical.

The extraction of potassium and chloride from tissues with water has been reported by various investigators and has been favorably compared with the standard procedure of ashing tissues. Since no published reports could be found comparing the water extraction with the acid extraction method for both potassium and sodium in livers, a comparison of these two methods on this tissue would be of particular interest to this investigation.

In order to test variability between methods and between livers, multiple samples of tissues from the same liver were used for both water and acid extraction methods. An analysis of variance suggested that in the case of potassium there were: (1) no difference among livers within the methods of extraction; (2) no difference with regard to method of extraction; and (3) the interaction of livers and methods contributed no significant variability. The results for sodium were the same except that the interaction suggested a slight statistically significant variability. This was repeated using a larger group of animals (fifteen). Samples of various weights were used in order to determine any difference in the sensitivity of the two methods.

The mean and S.E. for potassium with the water extraction method was 85.2 ± 0.51 Meq kg as compared to 83.3 ± 0.63 Meq kg for acid extraction. For sodium the mean and S.E. by the water extraction method was 34.1 ± 0.71 Meq kg as compared to 34.3 ± 0.80 Meq kg. Sample sizes within the range used (82–216 mg.) did not appear to be an important factor. Since no statistical choice between these two procedures was evident and as a practical matter the consistent use of one method on some other basis could be justified, the simpler procedure—water extraction—was chosen and used.

Large deviations from animal to animal have been reported in liver glycogen determinations. Various factors such as age, sex, and strain have been suggested as causes for this variability. Another factor which, from a quantitative point of view is more important, was originally suggested by Forsgren (114) and later confirmed by Agren *et al* (115) who wrote, "there are cyclic changes in the glycogen content of livers independent of food intake." "Glycogen accumulates in the liver during the

night and disappears again to some extent the next morning." Other investigators have denied an intrinsic metabolic cycle for glycogen in the liver and suggest that it is only a reflection of periodicity in feeding and digestion.

It seemed important to re-examine this question while controlling other factors such as age, sex, strain, room temperature, etc. Groups of animals to whom food and water were available at all times were sacrificed hourly from 8:00 A.M. to 3:30 P.M. This was done for adrenalectomized and intact mice. Results demonstrated that the depletion of liver glycogen takes place from hour to hour during the daytime period. This appears to be a clue to what Nissm (112) referred to as "bewildering scattered values of liver glycogen in control and injected mice."

Neuteld and Collip (121) and more recently Swennson (89) have reported that in mice the first 5 hours of fast do not entail any reduction of liver glycogen. This was checked further since it was not in agreement with earlier findings of this investigator. The effect of fasting on liver glycogen was studied on intact and adrenalectomized mice fasted from 3–24 hours. Fasting periods were scheduled so that all determinations were made at about the same hour of the morning. It was noted that in intact mice. liver glycogen decreased 40 per cent in the first 3 hours and at the end of 7 hours of fast there occurred a 69 per cent depletion when compared with the control unfasted group. In the adrenalectomized animals the same conditions were noted except that the liver glycogen was depleted at a somewhat greater rate.

The relationships between glycogen, potassium, and sodium were examined in intact and adrenalectomized mice. Variations in liver glycogen levels were obtained by fasting adrenalectomized mice to obtain lower limits of liver glycogen. Maximum deposition was realized when fed mice were injected subcutaneously with 1/20 ml of cortisone acetate (25 mg. cc) 10 hours and again 2 hours prior to sacrifice.

In the first of these experiments, determinations were made on fed, fasted, and fed animals that had been treated with cortisone acetate. There were parallel increases in the absolute liver weight, potassium, and sodium with increases in liver glycogen. However, if the measurements of glycogen, potassium, and sodium were determined as concentrations, it was noted that the potassium concentration was almost identical in each instance (88.6 Meq/kg) despite the fact that the liver glycogen varied from 7.9 g/kg to 112.7 g/kg. On the other hand the concentrations of sodium tended to fall as the absolute contents increased. Thus the liver sodium concentration of the cortisone-treated fed mice was significantly lower than that of the untreated fasted mice.

It was further noted that liver weight was decreased significantly by a 24-hour fast and increased by feeding and treatment with cortisone acetate in adrenalectomized mice. The effect of cortisone acetate was

brought out particularly in the adrenalectomized mice since in a period of 10 hours it increased the liver glycogen 78 per cent. Here again the parallelism between the absolute values of potassium, sodium, and glycogen was evident. The fact that the sodium concentration of adrenalectomized mice was significantly higher than that found in intact animals was of possible biological significance.

The next study sought to determine whether liver glycogen deposition, which might be attributed to gluconeogenesis from protein, maintained the same relationship with potassium and sodium as found in mice on a balanced diet. An experiment was designed in which the effect of cortisone acetate and vitamin-free casein both alone and together on glycogen, potassium, and sodium could be studied in adrenalectomized mice. Under these conditions, the parallel relationship among glycogen, potassium, and sodium was present only in that group that had received both casein and cortisone acetate. In groups receiving one or the other but not both and which demonstrated marked increases in liver glycogen levels, the total mean potassium and sodium were not higher than in the adrenalectomized fasted mice. Here again, although the potassium concentrations did not vary with glycogen and were of the same magnitude as that of the intact mice, the sodium concentrations for the adrenalectomized animals, other than those receiving both cortisone acetate and casein, were higher than that for the intact fed group.

Changes in liver weights noted in previous experiments were in excess of actual weight of glycogen, potassium, and sodium added or lost. It appeared important, therefore, to determine whether changes in these substances were related to changes in water content of the livers and to determine whether changes in moisture content contributed to changes in liver weights. This experiment was similar to experiment 1 except that an additional group was added which had been fasted for 24 hours and treated with cortisone acetate.

The increase in liver weight paralleled the increases in total glycogen, potassium, and sodium as found in other experiments. Of particular interest was the fourteen-fold increase in the total mean liver glycogen of the fasted mice treated with cortisone acetate. In all of the animals in this experiment, a parallelism was found to exist between glycogen and water when the absolute value (grams of water per liver) was determined. Glycogen-water ratios were determined under conditions of feeding, fasting, with and without cortisone acetate. Results indicated that when an increase in total liver glycogen was due to: (1) feeding, the ratio was 3.05; (2) giving cortisone to fed animals, 3.82; and (3) giving cortisone to fasted animals, 2.80.

In summarizing it appears that changes in liver weight associated with changes in glycogen were remarkably consistent throughout the experiments. Relating glycogen changes (mg./liver) to wet weight, dry weight,

dry weight minus glycogen, it becomes evident that only dry weight minus glycogen remained essentially unchanged and could be taken to represent essential protoplasm of the cell. If glycogen, potassium, and sodium are calculated on that basis the following facts are revealed: (1) both feeding and cortisone were effective in producing significant increases in liver glycogen; (2) changes in the amount of potassium and sodium appeared to be associated with glycogen changes only between fed and fasted animals regardless of cortisone treatment. Where liver glycogen levels had been raised due to treatment with cortisone acetate or feeding of protein (gluconeogenesis) the parallelism between glycogen, potassium, and sodium noted in mice on balanced diet (glycogenesis) did not obtain. Furthermore, in the adrenalectomized animals there were increases in the sodium concentrations of the livers as the result of adrenal insufficiency although the potassium concentrations did not vary from those noted in the intact fed groups.

The water content of the livers was a constant percentage of liver weight and consequently increased with the wet weight of the liver. The limits of the water-glycogen ratio were found to range from 2.80 to 3.82.

A résumé of the principal effects shown by these experiments is given in the following table (table 13), on page 90.

TABLE 13

SUMMARY TABULATION OF RESULTS

THE EFFECT OF CORTISONE AND FASTING ON TOTAL LIVER GLYCOGEN, POTASSIUM, AND SODIUM IN INTACT AND ADRENALECTOMIZED MICE

THE EFFECT OF CORTISONE

Group	Glycogen	Potassium	Sodium
Fed	increased ($P < .01$)	increased ($P < .01$)	increased ($P > 0.1$)
Fasted	increased ($P < .001$)	increased ($P > 0.7$)	increased ($P < .01$)
Fed adrenxd.	increased ($P < .001$)	increased ($P < .02$)	increased ($P > 0.2$)
Fasted adrenxd.	increased ($P < .001$)	decreased ($P > 0.6$)	no change ($P > 0.9$)

THE EFFECT OF FASTING

Group	Glycogen	Potassium	Sodium
Intact	decreased ($P < .001$)	decreased ($P < .001$)	decreased ($P > 0.3$)
Adrenxd.	decreased ($P < .001$)	decreased ($P < .001$)	decreased ($P < .01$)
Intact treated with cortisone	decreased ($P < .001$)	decreased ($P < .001$)	decreased ($P < .001$)
Adrenxd. treated with cortisone	decreased ($P < .001$)	decreased ($P < .001$)	decreased ($P < .01$)

THE EFFECT OF ADRENALECTOMY

Group	Glycogen	Potassium	Sodium
Fed	decreased ($P < .001$)	decreased ($P > 0.1$)	increased ($P > 0.1$)
Fasted	decreased ($P < .05$)	increased ($P > 0.9$)	decreased ($P > 0.6$)
Fed treated with cortisone	decreased ($P < .01$)	decreased ($P < .05$)	increased ($P > 0.5$)
Fasted treated with cortisone	increased ($P < .001$)	increased ($P > 0.3$)	increased ($P < .02$)

STUDIES ON THE MECHANISM OF ABSORPTION OF FRUCTOSE FROM THE INTESTINE OF THE RAT

by NICHOLAS MILTIADES PAPADOPOULOS *

A procedure for the purification of a commercial preparation of fructose diphosphate by fractional precipitation with alcohol has been worked out. A highly pure barium fructose diphosphate was obtained.

Methods and procedures have been developed for the extraction, separation, identification, and direct determination of fructose, fructose-6-phosphate, and fructose-1,6-diphosphate. The methods were employed both for *in vitro* and *in vivo* studies.

Homogenates of intestinal mucosa in phosphate buffer solution, pH 7.8, mixed with ATP and fructose and incubated at 30° C. showed the formation of fructose-6-phosphate and fructose-1,6-diphosphate. The latter esters were determined by the above mentioned methods and identified by paper chromatography and by copper reduction before and after hydrolysis. Trichloroacetic acid extracts of the mucosa of the intestine, removed from anaesthetized rats at varying intervals after injection of fructose into the duodenum, showed the presence of the same esters. Small amounts of fructose monophosphate and diphosphate, but not free fructose, were found in control analyses of intestinal mucosa and blood.

Balance studies in which fructose diphosphate was added to buffered homogenates of intestinal mucosa, accounted for the conversion of 75 per cent of the fructose diphosphate into free fructose and fructose monophosphate. The 25 per cent unaccounted for may be due to aldolase or other enzymatic activities in the intestinal mucosa.

The data appear to support the phosphorylation mechanism of the absorption of fructose. A possibly increased glycolytic activity in the intestinal mucosa during sugar absorption is not ruled out, but does not appear to be the primary mechanism.

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SOME EFFECTS OF X-RADIATION, MAGNESIUM SULFATE, AND GLUTATHIONE ON *HYDRA LITTORALIS*

by HELEN DOROTHY PARK *

The effects of X-radiation on viability, ability to differentiate new tissues, time of appearance of first buds, and on budding rate of *Hydra littoralis* were studied. The modification of these effects produced by a number of different radiation exposures was studied using continuous postirradiation treatment with $MgSO_4$ and glutathione and a previous sublethal exposure to the radiation.

The hydras were cultured in the laboratory at 25° ± 1.5° C. in a dilute solution containing NaCl, KCl, and $CaCl_2$ (standard control saline). All treatment solutions were made up in the standard saline, and except where noted were 5×10^{-4} M $MgSO_4$ and 1×10^{-4} M reduced glutathione. All hydras in the stock cultures were fed brine shrimp larvae daily. Under these conditions they reproduced asexually.

The radiation factors were 50 kv constant potential, 50 milliamperes, a 0.020 inch aluminum filter, and a dose rate of approximately 2,700 r per minute.

All data obtained from the experiments were subjected to statistical analysis.

Viability

It was found that 25,000 r resulted in the death of 38 of 50 nonbudding adult hydras within 24 hours. $MgSO_4$ modified the acute lethal effects of the radiation to the extent that 30 of 50 irradiated hydras exposed to the agent were living 24 hours later. Neither glutathione nor $MgSO_4$ + glutathione modified the injurious effects significantly. None of the 50 nonirradiated hydras in each of the solutions died within 24 hours. Neither 13,000 nor 4,500 r killed any of the 50 hydras receiving each dose within 10 days. All 30 of the hydras receiving 2,250 r were living 10 days later. All of the hydras in these four groups were offered food daily. Only in the 4,500 and 2,250 r experiments were the animals able to eat throughout the periods of observation.

Differentiation of New Tissues

Differentiation of new tissues was studied using complete development of the early bud and regeneration after transection of the apical and basal organs of the hydras as criteria of effect. When 26 hydras with early

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buds were given 25,000 r, 24 of them survived 24 hours. Tentacle differentiation was inhibited to the extent that these organs did not grow to full length. Pedal disc development was inhibited to the extent that by the time all nonirradiated control buds had separated from their parents (the fourth day) only four of the surviving 23 irradiated buds had separated from the adult hydras.

Twenty-eight of 30 early buds that received 13,000 r separated from the parents by the time all of the nonirradiated buds developed completely. No gross morphological abnormalities were observed in the 28 fully developed young. The other two buds failed to separate from the parents by the end of 10 days, showing incomplete pedal disc differentiation. Forty-five hundred and 2,250 r had no effect on bud development when the buds were irradiated at an early stage.

In order to test the efficacy of $MgSO_4$ and glutathione in modifying the inhibiting action of the radiation on differentiation, the regeneration of apical and basal parts of adult nonbudding hydras was studied. The hypostomes with tentacles and stalks with pedal discs were removed from the middle regions immediately after an exposure to 13,000 r; the middle pieces were put in their respective solutions and kept for 15 days with a change to fresh solutions each day. Among the nonirradiated hydras the only significant effect observed was that the specimens in $MgSO_4$ + glutathione regenerated more tentacles per hydra than the controls in standard saline; the mean number of tentacles in saline was 3.9, in $MgSO_4$ + glutathione, 4.8. The radiation had no significant effect on the development of a functional pedal disc; seventeen of the 20 irradiated specimens were able to attach to the bottom of the dish. The radiation inhibited to some extent the regeneration of tentacular tissue; the mean number of tentacles (short as well as functional ones) was 3.0. The development of full length, functional tentacles was greatly inhibited by the radiation; only 11 of the 20 hydras developed full length tentacles and these soon degenerated to stubs. Neither $MgSO_4$ nor glutathione separately modified this effect. The combined treatment, however, modified the effect to the extent that all of the specimens developed full length tentacles, although after 10 days these began to degenerate, and at the end of the 15-day experimental period less than half of them were functional.

The effect of withdrawal of food on bud development in nonirradiated hydras was studied. Food was withdrawn from 50 hydras when buds were just discernible. All of the buds developed completely and separated from the parents by the time all buds separated from the fed hydras.

Forty-five hundred r had no significant effect on bud development.

Bud Initiation

Since only 12 of 50 hydras receiving 25,000 r survived 24 hours, and since hydras with buds receiving 13,000 r did not produce any second buds within 10 days, it is considered that 25,000 r is above the quantity of radiation which would permit bud initiation.

Thirteen thousand r almost completely inhibited the initiation of buds when the hydras had no discernible buds at the time of irradiation; only one hydra out of 50 produced a bud in 10 days. Fifty nonirradiated hydras produced 330 descendants in this time. The irradiated animals ate for five days, caught prey for one or two more days, and all were living at the end of 10 days.

The effect of $MgSO_4$ and glutathione on bud initiation and rate of budding after 4,500 r was studied. Fifty hydras were started in each treatment group. The animals were fed an excess of brine shrimp and changed to fresh solutions each day for 11 days. $MgSO_4$ and $MgSO_4$ + glutathione had a stimulating effect on the rate of budding of nonirradiated hydras over a period of 11 days. The stimulation in both cases was approximately the same. The rate in glutathione was not significantly different from that of the control hydras in standard saline. Forty-five hundred r greatly delayed the time of appearance of first buds and depressed the budding rate over a period of 11 days. $MgSO_4$ shortened the delay but had no significant effect on the budding rate. Glutathione shortened the delay and increased the budding rate. The two agents together shortened the time of appearance of first buds to that of the nonirradiated controls in standard saline. The combined treatment increased the budding rate over that of the irradiated hydras in standard saline, in $MgSO_4$, and in glutathione. Moreover, the rate in the combined solution was equal to that of the nonirradiated hydras in standard saline.

$MgSO_4$ and glutathione concentration tests were run on hydras exposed to 4,500 r. The concentrations ranged from one-half to sixteen times those used in all previous experiments. No concentrations of $MgSO_4$ had a significant effect in increasing the budding rate over a period of 11 days. Within a concentration range of 1×10^{-5} to 4×10^{-5} moles per liter, glutathione increased the budding rate, while 1.6×10^{-4} moles per liter was highly toxic, killing 14 of 15 hydras within 7 days. Five nonirradiated hydras placed in this solution were dead five days later. The results of the concentration tests indicate that the optimal concentration ranges were 5×10^{-4} to 2×10^{-3} M $MgSO_4$ and 2×10^{-3} to 4×10^{-3} M glutathione when the two agents were supplied together.

Observations on Feulgen stained whole mounts of hydras given 4,500 r showed abnormal mitotic figures from days one through five (the last

day observed). Abnormal mitotic figures were observed in hydras with and without developing buds.

Twenty-two hundred fifty r had no effect on the time of appearance of first buds nor on the budding rate.

Tests were run to determine the effect of withdrawal of food on bud initiation. In contrast to the absence of effect of withdrawal of food on bud development, deprivation of food had a great effect on the initiation of buds. Sixty-five hydras produced only four buds in 10 days. $MgSO_4$, glutathione, and the two agents together, each stimulated slightly the production of buds, although the number produced was far less than the number produced by fed hydras in each of the solutions.

Differential Sensitivity

Since 25,000 r killed 77 per cent of adult hydras without buds but only 8 per cent of hydras with buds (a significant difference) within 24 hours, it was of interest to determine the relative radiosensitivities of adult and young tissues. It was found that adult tissues were much more sensitive to the acute lethal effects of 30,000 r than young tissues; 47 of 67 adults were dead in 24 hours while only 8 of the young hydras separated from the adults just before irradiation were dead. When adults and young were given 4,500 r no deaths occurred in either group up to 10 days. Both groups were fed every day and when their budding rates were compared it was found that they were not significantly different from each other.

In regard to the differential sensitivity of tissues to high doses of radiation, it was found that of three regions of the hydra (hypostome with tentacles, body, and stalk with pedal disc), the body was far more sensitive than either of the other two regions. Twenty-three hypostomes with tentacles, 17 stalks with pedal discs, and 4 bodies from 30 hydras survived 24 hours after 30,000 r.

It was noted that some of the hydras that were living 24 hours after 25,000 r appeared to be morphologically normal. It was of interest to determine how hydras that had apparently recovered from an exposure to radiation responded to a second exposure 24 hours after the first. Thirty hydras exposed to 15,000 r showed some damage (such as loss of epidermal cells and loss of gastrodermal cells through the mouth) for three or four hours. The hydras appeared to be morphologically normal at the end of 24 hours. When the hydras were given a second dose of 15,000 r 24 hours after the first, they did not lose epidermal and gastrodermal cells and all were alive 48 hours after the start of the experiment. On the other hand only eight of the 30 hydras that received a single exposure of 30,000 r were living 24 hours later.

Recapitulation

In conclusion, it can be said that of the end points studied, bud initiation was the most sensitive indicator of radiation damage, while viability was the least sensitive indicator. Differentiation of tissues, both in the developing bud and during regeneration was a much less sensitive indicator than bud initiation. After the radiation exposures used, differentiation showed about the same threshold of response as viability of the organism.

The only end point studied in nonirradiated hydras on which $MgSO_4$ had a significant effect was that of budding of fed and starved hydras. Glutathione had no significant effect on any of the end points studied in nonirradiated hydras except budding of hydras from which food had been withdrawn. The two agents together stimulated the regeneration of tentacles in the sense that specimens in the solution regenerated more tentacles per hydra than the nontreated controls. A second effect of the two agents together on nonirradiated hydras was a stimulation of budding of both fed and starved hydras.

The differential sensitivity of hydra tissues to radiation depended on the end point studied and the quantity of radiation given. Adult tissue was more sensitive to the acute lethal effects of 30,000 r than young hydras. No difference in sensitivity between adults and young was found where depression of budding rate after 4,500 r was concerned. The presence of a developing bud "protected" adult hydras against the lethal effects of 25,000 r as measured by the number of survivors 24 hours later. The middle section of a hydra body was more sensitive to the disintegrating effects of 30,000 r than either the hypostome with tentacles or stalk with pedal disc.

In regard to modification of X-ray injury, $MgSO_4$ had a significant effect on survival for 24 hours following 25,000 r and reduced the delay in appearance of first buds after 4,500 r. Glutathione modified to some extent the delay in appearance of first buds and increased the budding rate of hydras within a certain concentration range. The two agents together stimulated the growth of regenerating tentacles; more functional tentacles were regenerated and maintained than in standard saline. $MgSO_4$ + glutathione reduced the time of appearance of first buds to that of the nonirradiated hydras in standard saline and restored the budding rate to that of the nonirradiated hydras in standard saline.

SPECIES DIFFERENCES AND SEX DIFFERENCES IN THE METABOLISM OF DRUGS

by GERTRUDE PATRICIA QUINN*

Species differences in response to drugs have long been recognized by pharmacologists and present a major problem in the study of drugs. A knowledge of some of the factors responsible for these observed differences might permit a better understanding of the pharmacological effects of a drug in various species and could provide a more rational basis for the testing of new drugs.

Differences in drug action among various species may be qualitative or quantitative. Qualitative differences refer to the type of response produced in an animal; for example, histamine produces a vasodepressor response in most mammals including man, but it produces a vasopressor response in some rabbits. Such qualitative species differences have been related to variations in anatomical structure or physiological function. Quantitative differences, on the other hand, refer to the varying amounts of a drug required to initiate a response or to the duration of action of a drug in different species receiving equivalent doses of the drug. There may be a number of explanations for the quantitative differences, but the rate of metabolism of a drug is probably of prime importance in determining its duration of action.

The recent development of microanalytical methods for the estimation of drugs in biological materials has made possible the study of the rates of metabolism of drugs. Brodie, Axelrod, Burns, and their collaborators have demonstrated that there are marked differences in the rates of metabolism of drugs in various species, including man. The rate of metabolism of a drug was considered to be the rate of disappearance of the compound from the blood. An extension of these latter studies has revealed that the oxidative metabolism of many drugs is a function of the microsomes of the liver.

The present thesis is concerned with a systematic study of species differences in the metabolism of several drugs utilizing three different pathways of metabolism, namely oxidation of hexobarbital to ketohexobarbital, dealkylation of aminopyrine to 4-amino-antipyrine, and hydroxylation of antipyrine to 4-hydroxyantipyrine and of aniline to p-aminophenol.

With hexobarbital, a hypnotic drug, it was possible to correlate the duration of action of the drug with its rate of disappearance from the

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blood and also with its rate of metabolism by the microsomes of the liver. The duration of action was measured as the sleeping time and the rate of the disappearance of the compound from the blood was expressed as the half-life of the drug. The sleeping time of dogs, rats, mice, and rabbits following the administration of hexobarbital was determined and found to range from an average of 12 minutes for the mouse to an average of 315 minutes for the dog. The half-life of hexobarbital in these species ranged from an average of 19 minutes for the mouse to an average of 260 minutes for the dog. A shorter duration of action of hexobarbital was associated with a shorter half-life and a longer duration of action was associated with a longer half-life. The rate of metabolism of hexobarbital by the microsomes of the liver was determined in these same animals. There was an inverse relationship between the duration of action and the metabolic activity of the microsomes. The enzyme activity was high in those species in which hexobarbital had a short duration of action; mice metabolized an average of 598 micrograms of hexobarbital per hour and slept an average of only 12 minutes. The enzyme activity was low in those species in which the drug had a long duration of action; dogs metabolized an average of only 36 micrograms per hour and slept an average of 315 minutes.

Similar species differences in the rates of metabolism of several other drugs were observed. There were marked differences among the various species in the rates of metabolism of aminopyrine by the microsomes of the liver. Using half-life determinations as a measure of the rate of metabolism, marked species differences were also observed in the rates of metabolism of antipyrine and aniline.

These experiments establish that the duration of action of a drug is dependent upon its rate of metabolism by the microsomes of the liver. There was no apparent correlation between the size of the animal and its ability to metabolize drugs. In all instances, the mouse showed the greatest activity in the metabolism of drugs, but other species varied in their ability to metabolize different drugs.

Sex differences, as well as species differences, in response to drugs have been reported by a number of investigators. Female rats have been observed to sleep longer than male rats receiving equivalent doses of hexobarbital. In this investigation, the sex differences in the duration of action of hexobarbital have been shown to be a reflection of its rate of metabolism by the microsomes of the liver. Furthermore, these observed differences in the duration of action and in the rates of metabolism of hexobarbital have been demonstrated to be related to the hormonal balance in the animal. Estradiol administered to male rats caused a marked increase in the duration of action of hexobarbital, from an average of 20 to an average of 86 minutes, and a decrease in the rate of metabolism by the microsomes, from an average of 739 micrograms hexobarbital per

gram of tissue per hour to an average of 178 micrograms. Correspondingly, testosterone administered to female rats caused a decrease in the duration of action of hexobarbital, from an average of 81 to an average of 36 minutes, and an increase in the rate of metabolism of the drug by the microsomes, from an average of 186 micrograms hexobarbital per gram of tissue per hour to an average of 536 micrograms.

Ovariectomy or the administration of adrenal cortical extract did not influence the duration of action of hexobarbital. Castration produced a slight increase in the duration of action of hexobarbital which decreased progressively over a period of several weeks, indicating a probable return to the normal pattern. At the time of sacrifice the activity of the microsomes of the castrated rat was found to be the same as that of the control animals. These results would suggest the development of a compensatory mechanism which afforded some protection against the effects of castration.

No sex differences in the duration of action of hexobarbital were observed in guinea pigs or mice. Male and female rabbits showed some difference in the duration of action of hexobarbital and a marked difference in the rate of metabolism of aminopyrine by the microsomes of the liver. Male and female rats were found to metabolize both aminopyrine and antipyrine at markedly different rates.

Finally, differences in the duration of action of hexobarbital were observed in inbred strains of mice. Inbred strains of rats exhibited variations in the rate of metabolism of antipyrine.

A STOCHASTIC MODEL FOR ECONOMIC TIME SERIES

by ROBERT TYNES SMITH III*

It is the purpose of this paper to develop a simple probability model which could have produced the actually observed sequence of an economic time series and which also may be effective in estimating probable values of the sequence for short future periods. The basis for the model considered is that successive terms are not independent and that the sequence results from a stochastic process which can be formalized by a Markov chain.

Tables to facilitate the estimation of transition probabilities have been developed using relationships of the normal bi-variate distribution. Graphical techniques are illustrated which facilitate determination of the distributions and translations required to use the tables.

A practical application is made to monthly and quarterly rail carloading data giving both point and interval estimates for several periods. The results are tested for consistency with initial assumptions and in one case are compared with a forecast series developed by more elaborate means.

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THE PUBLIC CAREER OF ALBERT HENRY WASHBURN

by WILLIAM ARDELL STELCK*

Albert Henry Washburn's public service at home and abroad covered a period of twenty-five years. At home he held governmental posts from 1893–1904 and again from 1917–1919; abroad he served from 1890–1893 as Commercial Agent at Magdeburg, Germany, and from 1922–1930 as United States Minister to the Republic of Austria. President Hoover had just selected him as Ambassador to Japan when he died suddenly in Vienna on April 2, 1930. A lesser-known American, Washburn's career assists in clarifying several of the main currents of our country's development.

Albert Henry Washburn, the only child of Edward and Ann Washburn, was born April 11, 1866 at Middleboro, Massachusetts, and always retained close connections with the town of his birth. Although his distant cousins—Elihu Washburne and his six brothers—were widely known, little had been heard of the branch of the family from which Albert was descended. He was reared in humble circumstances. His parents possessed only a limited education, but his Aunt Mary White—a beloved teacher in the schools of Massachusetts for several decades—encouraged him to get a college education. The political environment of Middleboro also influenced his early thinking. A bright student, he was interested in political affairs at an early age. He grew up in the post-Civil War atmosphere of Radical reconstruction viewing Democrats as traitors, a protective tariff as a necessity, and the Republican party as the savior and protector of the Union.

Knowledge of shorthand acquired in his spare moments permitted him to work his way through Cornell University by serving as private secretary to ex-President Andrew D. White and President Charles Kendall Adams. It was White who advised him to enter the foreign service and save enough to finance the study of law. At Cornell Washburn gained a reputation as an orator and campus politician and was graduated with honors in 1889 taking with him firm views concerning the importance of honest and intelligent public service.

As a Cornell senior Washburn had participated actively in the Presidential campaign of 1888 and attracted the attention of party leaders. He was rewarded with an appointment as Commercial Agent at Magdeburg, Germany. At Magdeburg, the sugar metropolis of the German Empire, Washburn performed most of the many and varied consular

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tasks, but devoted the bulk of his time to reporting duties and certifying invoices of sugar exported to the United States. His strict enforcement of regulations brought protests and unsuccessful demands by the Magdeburg Chamber of Commerce for his removal. When exporters illegally sought authentication of their invoices in neighboring consular districts, Washburn uncovered the subterfuge, but received only half-hearted support from his colleagues in his attempts to halt this illegal practice. General lethargy throughout the politically appointed consular service and other incidents he observed of inefficiency and dishonesty (false vouchers for rent, stationery, and office equipment; general abuses by merchant-consuls and consular agencies; the large number of alien consuls who were themselves doing business with the United States and in a position to harm its revenue interests) precipitated his life-long interest in foreign service reform.

The Department of State regarded Washburn as a competent young officer. It printed a number of his generally excellent reports. Most of them dealt with German developments in the sugar-beet industry which, during these years, was slowly gaining a foothold in the United States. But when the Democrats regained power in 1893 they dismissed him. When they asked him to take another post a few weeks later Washburn had already accepted Senator Henry Cabot Lodge's offer to become his private secretary. He returned to Washington in the summer of 1893 having gained a valuable insight into the problems facing our representatives abroad and a first-hand view of European politics.

Washburn served Lodge until 1897. During this time he took a law degree at Georgetown University along with special legal training at the University of Virginia. Lodge and Washburn became good friends and subsequently maintained a close personal and political association. Washburn subordinated personal political ambition to Lodge's political welfare, and the Senator, who never hesitated to reward this loyalty, was the important factor in Washburn's later appointments to public office. As Lodge's trusted aide, mender of political fences, and campaigner, Washburn broadened his own contacts in Massachusetts and on the national level. An absence of personal political ambition permitted him to move freely in Republican circles, and his ability and industry caused him to be widely respected while he was still a young man. He was elected a delegate and attended the Republican National Convention of 1896, and during the campaign of that year spoke widely throughout Massachusetts. He continued to be active in the Massachusetts Republican organization until 1904.

In early 1897 he became a partner in the Middleboro firm of Stetson and Washburn and shortly thereafter opened a branch office in Boston, having been appointed Assistant United States Attorney for the District of Massachusetts. In this position he gained valuable experience in

federal practice from the varied business arising in the port of Boston. Experience as a consul proved helpful when he was placed in charge of all customs suits in the district. This was the beginning of his specialization in the intricate problems involved in tariff legislation and the importing business. He participated for the prosecution in the second celebrated "Mate Bram" trial growing out of the murders on the barkentine "Herbert Fuller".

An Act of March 2, 1895 provided for a special counsel to protect the interests of the Treasury Department in cases before the Board of United States General Appraisers. Washburn, appointed with Lodge's assistance in June, 1901, was the second man to hold this position. The Board, which had been created by the Customs Administrative Act of 1890, heard appeals for reappraisal and protests in classification of imports, most of them arising in the port of New York. Washburn also represented the Government before the roving General Appraisers in other cities and in court cases appealed from the Board's rulings. During his three years as Special Counsel he gained an intimate knowledge of the legal aspects of customs administration. The large percentage of cases he prosecuted successfully, brought him to the attention of Albert Comstock, a prominent New York customs lawyer. Forced to retire because of ill-health, Comstock offered Washburn a partnership and arrangements were completed in October, 1904.

Washburn engaged in the private practice of law from 1904–1919. He became senior partner of the firm when Comstock died in 1905 and soon brought in three partners. The immediate success of his private practice moved him into an income bracket many times beyond that of his previous government salary. By broadening his carefully planned investment program he achieved financial independence within the next decade. Representing importers reversed his strong support of a high tariff. He became an unofficial spokesman and publicist for the importers, holding that well organized domestic pressure groups exerted a disproportionate influence on tariff legislation to the detriment of the nation's economy and to the hardship of the importers as a group.

Several of Washburn's articles advocating a scientific tariff and a tariff commission received wide circulation in publications such as *The Forum* and the *North American Review*. In other articles and in testimony before Congressional committees he also championed the reform of the complicated and inequitable rules and regulations of customs administration. His briefs and arguments in several cases attracted international attention involving as they did interpretation of the most-favored nation clause. He was decorated by the Norwegian Government in 1914 for his services in the American Express Company case growing out of the wood-pulp section of the ill-fated Canadian Reciprocity Agreement of 1911. Washburn's professional standing was recog-

nized by his selection in 1917 as the first President of the Association of the Customs Bar.

From 1917–1919 Washburn served as a delegate to the Massachusetts Constitutional Convention, assuming a prominent part in its proceedings. Aside from a continuing association with Senator Lodge he had not been identified with political factions in the State for more than a decade. This fact and his personal prestige in his home district largely accounted for his election. The Convention was essentially a conservative body even though it had been called as a result of the efforts of the Progressive movement to bring state affairs under closer control of the people. It made few political adjustments to the changed economy and industrial society of Massachusetts. Although regarded as a conservative, particularly while leading the fight for "safeguards" to the Initiative and Referendum amendment—to which the Convention devoted over half its time—Washburn's role was an independent one.

In 1919 Washburn retired from his well-paid legal practice to accept a newly established chair of International Law at Dartmouth College. Stronger in research than in class room teaching he contributed several technical articles on his subject to professional journals during his three years at Dartmouth. He resumed a more active role in Republican politics during the 1920 campaign and supported Lodge's fight against the League of Nations. In a series of speeches and in several popular and scholarly articles he defended the Lodge reservations to the Versailles Treaty and advocated a prominent role for Congress in the conduct of foreign affairs. He believed the United States would join an international "League" of some kind and insisted he was not pleading for a policy of isolation. He contended that the American people did not understand, and therefore were not prepared to assume the obligations imposed by Article X of the League Covenant.

After Harding's election, Lodge, Coolidge, and the Massachusetts Congressional delegation supported Washburn's candidacy for a "minor European diplomatic post". Senator Joseph T. Robinson, a classmate at the University of Virginia, wanted Washburn to receive the post at Berne, Switzerland. Lodge wanted Berne for Washburn, but he was also looking out for Joseph C. Grew. Robinson tried to block Grew's confirmation to Berne, but Lodge forced it through during the absence of Robinson from the Senate committee, agreeing to send Washburn to Vienna.

Washburn arrived in Vienna in June, 1922 at a time of great financial crisis for the Republic when the aftermath of the war was still felt in all its force. He soon became a strong advocate of prompt action to save Austria from complete fiscal collapse and played an active part in obtaining the League of Nations loan for Austria in 1922–1923. Again in the period 1927–1929 he used his influence to help Austria float a long-term

external loan. He negotiated and signed on June 19, 1928 a Treaty of Friendship, Commercial and Consular Rights, and an Extradition Treaty on January 31, 1930. His carefully prepared despatches were highly regarded by the Department of State. With some success he worked for the cultural rapprochement between Austria and the United States, actively supporting the exchange of students, assuming leadership in the Austro-American Society, and promoting at every opportunity the Austrian tourist trade.

In addition to his regular diplomatic duties Washburn served as United States delegate to the Commission to Revise the Rules of Warfare which met in The Hague during 1922–1923, and as President of an Austro-Yugoslav arbitration commission created to settle commercial disputes between the two nations.

Senator Lodge, who was mainly responsible for Washburn's appointment as Minister, died in 1924. Washburn's record by this date, however, was such that President Coolidge continued his services at Vienna, as did President Hoover in 1929. In early 1930 Hoover selected him to be Ambassador to Japan, and Washburn had returned to Vienna to close out his business and receive Austria's highest honor when he died suddenly of blood poisoning resulting from an apparently harmless scratch.

Like all people, Washburn was the product of both heredity and environment. By nature he tended to conform. His modesty and a quiet, reserved personality gained him many close and lasting friends. Careful control of his abundant energy made him a man of calculation, not impulse. Born and reared in humble circumstances and growing up in an age that measured achievement largely in monetary terms, he developed a compelling drive for financial success. The environment in which he grew to political maturity, his long association with Senator Lodge, and his later financial position all influenced his outlook and strengthened his conservatism. Eight years as a diplomat mellowed his strongly nationalistic inclinations. With the exceptions of foreign service and tariff reform, he was generally devoted to Republican party regularity. Although he preferred accommodation to controversy in his personal relations, Washburn was an aggressive lawyer and a hard-fighting, practical politician. On the other hand, he supplemented a naturally keen mind with wide miscellaneous reading; and his interest in international and public affairs and his inherent scholarly tastes found expression in numerous popular articles in magazines and reviews and in more technical contributions to professional journals. In all probability he would have found happiness and satisfaction in an academic career.

Although American isolation generally precluded spectacular performance by diplomatic representatives abroad during the 1920's, the quality of Washburn's service in Vienna compares favorably with that normally expected of political appointees. By training and experience he

was well qualified for a diplomatic post. He tended to rely on legal, orderly procedure, but the few pressing problems he encountered affecting the interests of the United States he met with decision and dispatch. One of his strong points was his ability to work closely with the several governments of the Austrian Republic. Another was his influential political contacts at home to which he could turn for support of programs he deemed to be in the best interests of the United States. In this respect his services in connection with the financial rehabilitation and the extension of credit to the struggling Republic were significant, if not decisive, factors in its survival. Well-educated and cultured himself, his sensitivity to the Austrian cultural tradition made him particularly suited for assignment to Vienna. American interests always came first, but his great personal affection for the Republic of Austria caused him to be highly regarded by Austrians in all walks of life. Indicative of the esteem in which he was held on the day of his funeral the city of Vienna declared two hours of mourning, all work stopped and thousands lined the streets as his body was carried to the grave.

During a lifetime of sixty-four years Washburn witnessed many changes in American life. Always a conservative, he recognized that conditions did change and adjusted, however reluctantly at times, to these changes. As a young consular officer, Government official in the customs service, advocate of foreign service and tariff reform, student of America's new international position following World War I, and finally as a diplomatic representative of the United States, Washburn was one of the many lesser-known Americans intimately involved in several of the main currents of our country's development from its relatively secure isolation to a position of world power. To his twenty-five years in the public service he brought a high sense of public duty and rendered consistently able service.

THE CEPHALOPODS OF THE GULF OF MEXICO

by GILBERT LINCOLN VOSS*

The material reported upon in this study was obtained primarily by the United States Fish and Wildlife Service vessel "Oregon" in the Gulf of Mexico from 1950 to 1955, but many individuals and institutions have contributed specimens and records for examination during the course of this work. Three hundred and one specimens were examined, representing 33 genera and 40 species of which 1 genus and 4 species are new to science. Prior to 1950, only about 6 species of cephalopods were known from this area, but from that date to the present the number of known species was increased to 26, chiefly by studies carried out by the author. The present report increases the number by 14 to a total of 40 species. On the basis of the present collections, it is considered that even this number will be materially increased when an adequate series of plankton from the Gulf of Mexico has been studied for planktonic cephalopods.

The cephalopods of the Western Atlantic, with the exception of the littoral octopods, have not been reviewed since the work of A. E. Verrill in 1882. Consequently, a considerable number of name changes have occurred, many new records have appeared in the literature, and many advances have taken place in our knowledge of their distribution and systematics. Since a lapse of nearly 75 years has occurred during which no material amount of work has been carried out on this group in the Western Atlantic, all of the species from the Gulf of Mexico are described briefly, the location of the types and the type localities are given, and each species is illustrated. Synonymies are not included as these are generally available in other recent works.

The following species are recorded from the Gulf of Mexico. *Spirula spirula* (Linnaeus), *Rossia tenera* (Verrill), *R. equalis* Voss, *R. bullisi*, n. sp., *R. tortugaensis*, n. sp., *R. antillensis* Voss, *Pickfordiateuthis pulchella* Voss, *Lolliguncula brevis* (Blainville), *Loligo pealei* Lesueur, *Sepioteuthis sepioidea* (Blainville), *Doryteuthis plei* (Blainville), *Lycoteuthis diadema* (Chun), *Oregoniateuthis springeri*, n. sp., *Abralia veranyi* (Rüppell), *Abraliopsis* sp., *Octopodoteuthopsis megaptera* (Verrill), *Onychia caribaea* Lesueur, *Onychoteuthis banksi* (Leach), *Pholidoteuthis adami*, n. sp., *Architeuthis physeteris* (Joubin), *Calliteuthis reversa* Verrill, *Bathyteuthis abyssicola* Hoyle, *Illex illecebrosus* (Lesueur), *Ommastrephes pteropus* (Steenstrup), *Chiroteuthis lacertosa* Verrill, *Mastigoteuthis* sp., *Cranchia scabra* Leach.

Vampyroteuthis infernalis Chun, *Opisthoteuthis agassizi* Verrill, *Tetra-*

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cheledone spinicirrus Voss, *Octopus vulgaris* Cuvier, *O. joubini* Robson, *O. briareus* Robson, *O. burryi* Voss, *Danoctopus schmidti* Joubin, *Pteroctopus tetracirrhus* (Delle Chiaje), *Benthoctopus januari* (Hoyle), *Alloposus mollis* Verrill, *Tremoctopus violaceus* Delle Chiaje, *Argonauta argo* Linnaeus.

While the present specimens have not revealed any features permitting new theories of cephalopod classification or phylogeny to be raised, in the present work the author has adopted the classification, with some modifications, given by Naef (1912) in which all of the living species of cephalopods, with the exception of the genus *Nautilus*, are combined within the subclass coleoidea. This subclass is further divided into five orders of which one, the Belemnoidea, is extinct. The remaining orders are the Sepioidea, the Teuthoidea, the Vampyromorpha, and the Octopoda. In this system the former suborder Myopsida is divided into the restricted suborder Myopsida, now contained within the order Teuthoidea, and the order Sepioidea which contains the families Spirulidae, Sepiolidae, Sepiidae, and Idiosepiidae. The Oegopsida remain unchanged under the Teuthoidea with equal rank with the restricted Myopsida which now comprises the families Pickfordiateuthidae and Loliginidae and the problematical families Promachoteuthidae and Lepidoteuthidae. The order Vampyromorpha contains only the species *Vampyromorpha infernalis* Chun, while the large order Octopoda includes all of the remaining octopodous cephalopods. It is believed that this system represents a better descent from the fossil forms, based primarily upon the shell structure, than does the more classical system of Orbigny which is based upon the morphology of the soft parts which is unknown in the forms available to the paleontologists.

The zoogeography of the cephalopods is comparatively unknown except in the commoner pelagic species. This is due largely to lack of knowledge of many critical areas of the oceans. In this respect the Gulf of Mexico is one of the blanks in our knowledge of cephalopod distribution. Geologically, the Gulf of Mexico is considered to be a Mediterranean-type basin, but a study of any particular fauna within the Gulf shows that this does not hold true in the zoogeographical sense. This is best illustrated by the low number of endemic species found in the Gulf as compared with the Mediterranean Sea which contains probably the highest number of endemic species of cephalopods of any comparable area in the world.

This discrepancy is undoubtedly explained by the peculiar physiography and hydrography of the Mediterranean as compared with that of the Gulf of Mexico. The shallow sill of the Straits of Gibraltar and the rapid evaporation of the surface waters causes a continuous inflow of water at the surface with a corresponding outfall over the sill of the Mediterranean deep water, thus preventing deep water forms from entering against the current and prohibiting the passage out of forms

found in the surface layers, all conditions admirably suited to the formation of endemic species. In the Gulf of Mexico, in contrast, there is no sill shallow enough, either in the Straits of Florida or the Straits of Yucatan, to prohibit a free interchange of both surface and deep water forms with the surrounding areas, and the current structure is such as to encourage a free mixing.

As a result, of the 40 species of cephalopods here recorded, 65 per cent are also found in the North Atlantic. Of the 65 per cent, 30 per cent are cosmopolitan in temperate and warm waters, 20 per cent are Western Atlantic, and 15 per cent are North Atlantic species. Of the remaining 35 per cent, 10 per cent are true Caribbean species distributed from the southern border of Brazil to Cape Canaveral, Florida, and Bermuda, and only 10 per cent, or 4 species, may be endemic to the Gulf of Mexico: *Rossia bullisi*, *R. tortugaensis*, *Oregoniateuthis springeri*, and *Pholidoteuthis adami*.

The Sepioidea are represented in the Gulf by 6 species of which all but one, *Spirula spirula*, are members of the genus *Rossia*. *R. tenera* and *R. equalis* are rather widely distributed in the Western Atlantic, while *R. antillensis* appears to be a West Indian species. *R. tortugaensis* and *R. bullisi* are probably endemic to the Gulf of Mexico.

Five species of myopsid teuthoids are now recognized from the Gulf. *Pickfordiateuthis pulchella* is known only from the Florida Keys associated with the shallow marine grass beds. *Lolliguncula brevis*, on the other hand, ranges widely throughout the West Indian faunal region and eventually 3 subspecies may be recognized. The form found in the Gulf is a large finned race quite different from that found on the east coast of the United States. It is the only squid in the Gulf which ventures into brackish water. *Loligo pealei* is common in the Gulf but is somewhat displaced on the southeast border by *Doryteuthis plei* which is a tropical species not found in the northern part. *Sepioteuthis sepioidea*, although recorded from the Dry Tortugas, has never been taken in the Gulf of Mexico proper. Its strange distributional pattern along the West Indies and southern Florida is unexplained.

The Oegopsida are represented by 14 species of which 2 have only been reported from the Gulf of Mexico. An unusual find was 2 species of lycoteuthids, *Lycoteuthis diadema* and a new genus and species, *Oregoniateuthis springeri*, both taken from deepsea fishes caught in the hauls. Two enoploteuthids occur in the Gulf, *Abralia veranyi*, a tropical and temperate species and an *Abraliopsis*, as yet taken only in fragments. Two onychoteuthids, *Onychoteuthis banksi* and *Onychia caribaea*, are present, both of which are cosmopolitan in warm and temperate waters.

Bathyteuthis abyssicola, known formerly from the Pacific and Indian oceans, occurred in the hauls as well as *Octopodoteuthopsis megaptera*,

Chiroteuthis lacertosa, and *Calliteuthis reversa*, all Western Atlantic species. Only a single cranchiid, *Cranchia scabra*, was taken.

An interesting find was a single specimen of one of the architeuthids or giant squids, *Architeuthis physeteris*, complete with spermatophores. This species was known previously only from a part of the mantle taken by the Prince of Monaco from the stomach of a sperm whale, off the Azores. This squid may enter into the diet of the numerous sperm whales in the Gulf of Mexico. It is the first time that the spermatophores of an architeuthid have been described.

One of the most important finds is a new species of squid, *Pholidoteuthis adami*. It has been provisionally placed in the above genus, recently described by Adam (1952) from the East Indies. This species is reported to be very numerous in the Gulf, appearing at the surface at night in vast schools.

The ommastrephids are represented by 2 species. *Illex illecebrosus* has only recently been reported from Cuba and is now known to occur commonly throughout the upper parts of the Gulf. It was taken at many stations, mostly along the coast. On the other hand, *Ommastrephes pteropus* is an active, large squid living in the pelagic zone and not infrequently encountered. *O. bartrami*, previously thought to occur in the Gulf, was not encountered by the "Oregon".

Vampyroteuthis infernalis has only been reported once from the Gulf of Mexico, and no specimens of this widely distributed archaic cephalopod were seen during the course of this study.

The genus *Octopus* is represented in the area by 4 species, 2 of which belong to the West Indian faunal region. Of the species, *O. vulgaris*, *O. burryi*, *O. joubini*, and *O. briareus*, only *O. burryi* may possibly prove to be endemic to the Gulf of Mexico.

The peculiarly flattened octopod, *Opisthoteuthis agassizi*, is considered to be a Western Atlantic species even though it has only once been recorded from off southwest Ireland by the "Michael Sars". *Tetracheledone spinicirrus* is also found in the upper part of the Gulf, and this recently described species may now be considered a common deep water species of the West Indian fauna. *Pteroctopus tetracirrhus*, well known from the Mediterranean, is first recorded from the Gulf of Mexico.

The planktonic and pelagic elements of the fauna are still poorly known and need investigation. Many cranchiids and a few enoploteuthids other than those reported here will certainly be added when the planktonic forms are studied.

An evaluation of general cephalopodan characters is given, and the importance of neristic and proportional characters is stressed. Color is considered to be untrustworthy in most cases as a diagnostic character. Although the radula is valuable, it should be used advisedly in closely related species. The spermatophores seem to have little variation in

character within a given species, and in the light of present knowledge seem to be one of the best means of distinguishing between species. The importance of standardized measurements is acknowledged, and all measurements, counts, and indices are defined.

Although a large number of species are described and figured in the present work, and a critical study of the literature accompanies each identification, no major changes in classification have been carried out. On the basis of the description of the shell vestige of *Opisthoteuthis agassizi*, Berry (1918) created two subgenera, *Opisthoteuthis* and *Teuthodiscus*, the former characterized by a two-parted vestige, the latter by a single U-shaped vestige. An examination of the shell vestige found in the present specimen revealed that *O. agassizi* in reality has a single U-shaped vestige also, and as a consequence the subgenus *Teuthodiscus* is considered to be invalid and is to be treated as a synonym of *Opisthoteuthis*.

In the histioteuthids a considerable amount of confusion has long reigned concerning the two genera *Calliteuthis* and *Stigmatoteuthis*. Pfeffer created the latter genus for those *Calliteuthis*-like histioteuthids bearing teeth on the suckers of the arms and the tentacular clubs, which he considered to be smooth in *Calliteuthis*. An examination of the present specimens and the type of *C. reversa* seems clearly to point to the fact that they are conspecific and that *C. reversa* actually has toothed tentacular suckers. Since the tentacles are lacking in the type, other characters are utilized. In the light of the present investigations, the genus *Stigmatoteuthis* is synonymized with *Calliteuthis*, but the identity of many of the species must await larger series. It is entirely possible that the rather large number of species formerly in the genus *Stigmatoteuthis* may be found to be only variants of two or three species at the most.

The genus *Onychia* has been recognized to contain 2 species in the Western Atlantic, *O. caribaea* and *O. aquis*. Pfeffer (1912), on the basis of the comparative size of the suckers of the hand and the carpal cluster, decided that the latter species was valid. An examination of the type of *O. aquis* in the United States National Museum revealed, however, that the difference was not true and that the type figure was in error. The examination revealed that *O. aquis* (Verrill) is identical with *O. caribaea* Lesueur, and it is placed in the synonymy of the latter.

Very little biological data could be obtained from the collections examined, and little is therefore known concerning the age, spawning, and larval development of the cephalopods of the Gulf of Mexico. A wide field of study is open to the student who can undertake this work. The full data concerning locality, surface and bottom temperatures when available, type of bottom, date and time of haul are given for each station.

ISOLATION AND STUDY OF A CARDIOTONIC SUBSTANCE FROM MAMMALIAN TISSUES

by HERBERT WEISS *

A cardiotonic substance was isolated from bovine heart, blood, adrenals, and liver. The presence of a substance with similar biological activity was demonstrated in the rabbit and dog.

The isolation procedure was followed and controlled by the bio-assay method of Hajdu and Szent-Gyorgyi. In this method the affect on the staircase phenomenon of the isolated frog heart is quantitated. Strophanthidin, the aglycone of strophanthin, is the substance used to standardize the heart. The aglycone is used since it can be removed from the frog heart by washing with Ringer's solution.

The staircase phenomenon is observed when the heart is stimulated at increasing time intervals. At a certain point the tension developed by the heart at each contraction is decreased. This gives the tracing a staircase-like appearance. The time interval at which the staircase starts is different for different amounts of strophanthidin. Bio-assay results are expressed in micrograms of strophanthidin per three milliliters of solution.

The isolated material was strophanthin-like in its persistence of action. It was adrenalin-like in that it could produce only a certain maximal effect beyond which increasing concentrations had no effect.

The isolated material showed a general contracture effect on the isolated frog heart along with its strophanthin-adrenalin-like action. In the extraction procedure tissue was homogenized with two volumes of acetone (w/v), and a third volume was added afterward. The mixture was stirred for one hour then filtered with suction. The filtrate was treated with 18g/1 of sodium chloride and extracted with an equal volume of petroleum ether. The extract was adjusted to pH 2.0 for eighteen hours when 160g/1 of sodium chloride were added and the mixture was very thoroughly extracted with chloroform equal to 20 per cent of the total volume. The chloroform, which was the upper layer, was dried over sodium sulfate, filtered, diluted with one tenth of its volume of ethanol, and distilled in vacuo. The concentrate was chromatographed on Florisil, a synthetic magnesium trisilicate, with a succession of solvents. These solvents are methylene chloride-ethanol 1:1 (v/v), ethanol, 70 per cent ethanol, and 50 per cent ethanol. The active material was generally found in the 70 per cent ethanol fraction. This frac-

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tion was evaporated and rechromatographed. The active fraction was evaporated and stored in the deep freeze.

The material was subjected to counter-current distribution in the system methanol:ether:chloroform:0.001 N hydrochloric acid, 2:1:1:1 (v/v). The three peak tubes were combined and crystallized from acetone-ethanol. The crystalline material sintered at about 110 degrees centigrade and decomposed at about 255 degrees centigrade. The elemental analysis of this substance gave the following percentile results: carbon 56.35, hydrogen 9.34, nitrogen 2.64, phosphorus 5.91, and oxygen 25.76. The minimum molecular weight based on phosphorus is 524 and 532 based on nitrogen.

The hydrolytic products of this substance were shown to be glycerol phosphate, choline, and a fatty acid with a melting point of 54.5-55.5 degrees centigrade and a molecular weight, determined by potentiometric titration, of 291. Chromatography by the method of Micheel and Schweppe on acetylated paper, of the hydroxamate of the fatty acid, prepared from the unhydrolyzed substance, showed only one spot with ferric chloride. This spot had the same mobility as palmitic acid although the molecular weight and melting point of these two substances did not agree.

The ester to phosphorus to nitrogen ratio was found to be 1:1:1. All the nitrogen present was accounted for as choline.

The chemical data is indicative of a lysolecithin.

Synthetic L-α-oleyl lysolecithin showed both staircase phenomenon and contracture activity. After treatment with phospholipase A (crude rattlesnake venom) 50 per cent of the ester bonds were lost and the contracture activity did not persist. This indicated that the staircase activity was associated with a lysolecithin esterified on the β carbon of glycerol. It also indicated that a γ esterified lysolecithin is a substrate for phospholipase A.

From analogy with these experiments, it is concluded that a mixture of lysolecithins has been isolated in which the two or three positions of glycerol are esterified with palmitic acid.

The enzyme, phospholipase D, has been purified in the course of this work. An acetone powder of cabbage was prepared. This was homogenized with water, centrifuged at 26,000 x G, and the supernatant was subjected to ammonium sulfate precipitation. The fraction precipitating between 40 and 66 per cent of ammonium sulfate was dissolved in a minimum of water and reprecipitated with ammonium sulfate. The precipitate was dissolved in a minimum of water and cold ethanol precipitation was performed. The fraction precipitating between 13 and 30 per cent of ethanol was dissolved in a minimum of cold water. Much of the precipitate did not dissolve. The solution contained the enzyme which was stable at minus twenty degrees centigrade for two to three weeks.

A TAXONOMIC TREATMENT OF THE GENUS *AXONOPUS*

by GEORGE ALEXANDER BLACK*

Axonopus is a genus belonging to the family *Gramineae*, subfamily *Panicoideae*, and to the tribe *Paniceae*. It is characterized by the single alternating spikelets in two rows along ventral axis of the raceme, by the reversed position of the spikelets, and by the absence of the first glume. It is readily distinguished from all other *Paniceae* by the combination of its characters. It is preponderantly American with only two old world taxa, one in Polynesia (Easter Island) and the other in Central Africa. It is mainly tropical and subtropical ranging southward from warm temperate North America through Central and South America to subtropical Northern Argentina. It has a number of wide-ranging ruderal species, especially in the series *Axonopus*, but the greater bulk of its species belongs to the South American savannas. The area with the most species is Eastern and Central Brazil with a secondary area on the Guiana shield. There are 108 species and 20 varieties.

The need for pasture- and forage-studies in animal husbandry (Zoótecnia) has an ever growing place in the economy of tropical and subtropical America. Accurate determination of pasture elements in agronomy is obviously indispensable. Many species of *Axonopus* are the important if not sole elements in the natural pasture lands within the range of the genus. They are often erroneously given names of certain well known species such as *A. compressus* and *A. scoparius* by regional botanists who have only local floras on hand which are rarely able to carry critical studies on the genera and species treated unless recent monographic treatments have appeared. It is for this reason that a taxonomic study of *Axonopus* seemed timely and was chosen as the topic for this dissertation.

The three main divisions of the genus, *Axonopus*, *Lappagopsis*, and *Cabrera* were retained as sections following Agnes Chase (1911). In view of the complexity of the section *Axonopus* it was further subdivided into 5 series: *Axonopus*, *Barbigeri*, *Suffulti*, *Capillares*, and *Fastigiati*, and the series *Barbigeri* was split into three subseries *Barbigeri*, *Scoparii*, and *Anceps*. The sections were divided primarily on the basis of the rachis. Vegetative characters such as habit, the leaves, and inflorescence were rather important in dividing some of the series and subseries. The diagnostic value of the spikelets for the generic subdivisions was based primarily on the color of the florets and the presence or absence of the midnerve on the glume and sterile lemma.

Of the *Axonopus* described 30 taxa have been placed in synonymy and

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20 have been excluded. Up until the treatment of *Axonopus* by Agnes Chase in 1911 its species were mainly placed in the genus *Paspalum* with the remainder principally in the genera *Digitaria, Panicum, Agrostis,* and *Erichloa.* Three genera were created for it: *Cabrera, Lappagopsis,* and *Anastrophus.* Thirteen species and varieties which are probably *Axonopus* but were described in other genera have been placed among the doubtful species without transferring them, due to inadequate material or descriptions.

PHARMACOLOGICAL STUDIES WITH A DIAMINO DICHLOROPHENYL PYRIMIDINE

by ELISE ANN BRANDENBURGER BROWN*

Interference with nucleic acid metabolism has been the aim of many investigators who were looking for new chemotherapeutic agents, because of the important roles that nucleic acids play in cell function and multiplication. In one such investigation it was found that many 2,4-diaminopyrimidines interfered with bacterial growth by antagonizing the functioning of folic acid derivatives (Hitchings *et al.*, 1952b). One of these compounds, 2,4-diamino-5-(4′-chlorophenoxy)pyrimidine, was tested also for antimalarial activity after its structural similarity to chlorguanide had been noted (Falco *et al.*, 1949). It was found to be as active as quinine in the malarial test system. Further study on this group of compounds showed that 2,4-diaminopyrimidines with a 5-monochlorophenyl or dichlorophenyl substitution were the most efficacious antimalarials (Russell and Hitchings, 1951). One of these compounds, pyrimethamine, is in clinical use as a malarial suppressive. Another compound, 2,4-diamino-5(3′,4′-dichlorophenyl)-6-methylpyrimidine (DDMP), has almost the same degree of antimalarial activity as pyrimethamine and, moreover, has other properties of pharmacological interest. DDMP and its 6-ethyl analog have been demonstrated to have antileukemic properties (Burchenal *et al.*, 1952) and oncolytic properties against sarcoma 180 (Clarke *et al.*, 1952). These dichlorophenyl pyrimidine derivatives also have striking properties as antifolic compounds. DDMP has been shown to produce signs of a folic deficiency in rats even in single doses and also to produce a deficiency state more promptly than a folic deficient diet; the symptoms of this deficiency can be alleviated by citrovorum factor (CF) at low levels of the antagonist but not at higher doses (Hitchings *et al.*, 1952b).

The compound, 2,4-diamino-5-(3′,4′-dichlorophenyl)-6-methylpyrimidine (DDMP), was synthesized and characterized. The molar extinction coefficient of DDMP at pH 1 was determined at several wavelengths in the ultraviolet region. These values were 11,238 at 250 mμ, 8,483 at 260 mμ, 7,947 at 275 mμ, and 7,411 at 280 mμ. The ratios of optical densities at different wavelengths were determined also.

Chromatography of the synthetic product added confirmation of its purity. Whatman #1 paper was used for all systems. In an acetone-water system the R_f of DDMP was 0.88; in butanol-ammonia-water the

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R_f was 1.0; and in butanol-ethanol-water the R_f was 0.87. The same R_f values were found with a sample of DDMP supplied to us by Dr. George Hitchings of Burroughs Welcome Research Laboratory who originally synthesized this compound (Russell and Hitchings, 1951).

Toxicity studies with DDMP indicated that the lethal dose for female DBA/2 mice is sharply defined at 38 mg. per kg. Doses of 35 mg. per kg. were acutely toxic and led to convulsions. If animals recovered from the convulsions they lived for several weeks, but 10 per cent then eventually died. The administration of the compound in smaller amounts, 25 to 35 mg. per kg. for each of 2 or 3 doses, resulted in delayed fatalities within a few days but no convulsions. The dosage regime used in the *in vivo* incorporation experiments, i.e., five doses of 5 mg. per kg. each at twelve hour intervals, gave no symptoms of either acute or delayed toxicity.

It has been shown that certain purine analogs such as 6-mercaptopurine interfere with the incorporation of nucleic acid precursors (Skipper, 1953). Experiments were therefore initiated to determine if DDMP might act as antagonist against the incorporation into nucleic acids of the known pyrimidine precursor, ureidosuccinic acid (USA) (Anderson *et al.*, 1955).

In vivo incorporation studies were performed with female DBA/2 mice injected with C^{14}-USA and DDMP or with C^{14}-USA alone. USA was administered at a total dose of 150 mg. per kg. divided into five equal doses given at twelve-hour intervals. The total dosage of DDMP was 25 mg. per kg., likewise given in five equal doses at the same time as the USA. DDMP was injected as a 10 per cent alcohol solution, pH 6. The animals were killed by cervical dislocation and livers, spleens, and bone marrow samples were removed and frozen immediately in dry ice and alcohol. Blood was collected from the portal vein and oxalated. The method of Hammarsten (1947) was used to extract the polynucleotides from the tissues and to separate them into PNA and DNA with lanthanum. The PNA was hydrolyzed with 1 *N* HCl, and the pyrimidine nucleotides and purines were separated by Dowex 50 ion exchange chromatography (Cohn, 1949). The pyrimidine nucleotides were degraded to free bases with formic acid (Vischer and Chargaff, 1948) and purified by starch chromatography (Reichard, 1949). The DNA was hydrolyzed with dry HCl in methanol (Vischer and Chargaff, 1948), and the pyrimidines were again further hydrolyzed with formic acid and purified on starch. The purity of the bases was checked by their ultraviolet absorption characteristics and by the ratio $E_{max.}$ per microgram N per ml. Radioactivity was measured at infinite thinness on glass plates using a gas flow proportional counter. Concentrations were determined from the ultraviolet absorption, using known extinction coefficients, and specific activities were calculated.

Comparison was made of the specific activities of the isolated pyrimidine bases from liver and spleen nucleic acids. The results of this comparison showed that USA was a good precursor of PNA pyrimidines in both tissues, and that there was only a small amount of incorporation of USA into DNA. Only one third as much USA was incorporated into spleen PNA as into liver PNA; the amounts incorporated into the DNA of the two tissues was equivalent. The incorporation into DNA and into spleen PNA was not affected by simultaneous administration of DDMP. However, the administration of DDMP caused the incorporation of USA into liver PNA pyrimidines to be increased two and one-half times. The specific activity of the uracil was increased to 440 cpm per micromole compared with a control value of 165 cpm per micromole. Cytosine was affected to a similar degree, and increased in specific activity from 101 cpm per micromole to 267 cpm per micromole.

One possible explanation for the increase in incorporation of USA into liver PNA pyrimidines was that the level of precursor in the animals was elevated due to urinary retention. To test this hypothesis, two groups of three female DBA/2 mice were injected with USA alone at a level of 30 mg. per kg. and an additional two groups of three mice were injected with the same amount of USA plus DDMP in a dose of 5 mg. per kg. Comparison was made of the amounts of radioactivity excreted in the first twenty-four hours and no difference was detected. It was concluded that urinary retention was not the explanation for the increase in incorporation of USA.

Although there is at present no known function of folic acid derivatives in the biosynthesis of pyrimidines, the fact that DDMP had been shown to antagonize folic acid made it conceivable that blockage of some unknown function of folic acid might have resulted in the channeling of more USA into pyrimidine biosynthesis. In an attempt to ascertain whether DDMP, as given in the incorporation experiment, was functioning as an antifolic, liver samples from mice injected with DDMP and from control animals were prepared for citrovorum factor assay. Female DBA/2 mice were used, as before; one group served as a control and another group was injected five times at twelve hour intervals with 5 mg. per kg. of DDMP. Liver samples were prepared for assay by the method of Chang (1953). The analyses for citrovorum factor were made microbiologically with *Leuconostoc citrovorum* (8081); they were performed very graciously for us by Dr. Milton Silverman of the National Heart Institute. The values obtained for CF were 9.8 micrograms per gm. of liver for the untreated mice and 9.2 millimicrograms per gm. of liver for the treated mice. Individual values showed considerable variation, but the two groups did not differ significantly. From this it was concluded that this level of DDMP did not exert an antifolic effect or that the effect must have been upon the utilization of

CF, or of other active forms of folic coenzymes derived from CF, rather than upon the level of CF, or of any folic derivatives converted to CF by this method.

In a further effort to determine whether DDMP *per se* was an antagonist of some form of folic acid, some *in vitro* studies were initiated with a system known to require tetrahydrofolic acid and also pyridoxal phosphate for the conversion of formaldehyde and glycine to serine. Another pyrimidine derivative, 2-methyl-6-amino-5-hydroxymethylpyrimidine, has been shown to be an antagonist of pyridoxal phosphate (Makino and Koike, 1954) and the requirement of the serine-forming system for both cofactors made it possible that antagonism of either folic acid or pyridoxal by DDMP might be detected. Examination of the effects of DDMP on this system still need further study. No effects of DDMP upon this system have been found either when it was added to the system *in vitro* or when the system was prepared from livers of animals which had received five doses of 5 mg. per kg. of DDMP *in vivo*. However, optimum conditions for the conversion need clarification. The activity of the extracts varied widely from one preparation to another. Tris buffer, which was used in most of these experiments, allowed much poorer conversion than did glycylglycine buffer, and this was apparently due to inhibition by Tris buffer since a higher concentration produced still greater inhibition. Glycylglycine, however, could not be used because it interfered with the separation of serine and glycine on the Dowex 50 columns. Further studies on the system and on the effects of DDMP are under way.

OBSERVATIONS ON THE EXPLORATION OF A STANDARD METHOD FOR INDUCING IRREVERSIBLE HEMORRHAGIC SHOCK IN LOCALLY ANESTHETIZED DOGS EMPLOYING A NEW AUTOMATIC BLOOD PRESSURE STABILIZING DEVICE AND BLOOD RESERVOIR

by ALBERT EINHEBER *

The shock state which often develops after various forms of trauma is usually initiated by a significant reduction (30–40 per cent) in the effective circulating blood volume. If therapy is delayed a progressive circulatory failure may supervene which is refractory to or recurs after adequate transfusion and or other currently available forms of treatment. This is the fatal "irreversible" stage of shock. While many investigations have shown the life-saving value of prompt and adequate transfusion, the primary cause(s) and time of onset of the physiological disturbances in irreversible shock have thus far not been established unequivocally. In the event of atomic warfare, the treatment of mass casualties may be unavoidably delayed, and irreversible shock may become a very important clinical problem.

The prime objective of the present investigation was to establish a standard method for inducing irreversible hemorrhagic shock in dogs, which could be employed to study the pathophysiological mechanisms involved, and to assay measures and agents for combatting this syndrome.

By irreversible hemorrhagic shock is meant that fatal state which exists after a dog is subjected to atraumatic oligemic hypotension of such duration and intensity that the reinfusion of the shed blood is of temporary benefit only since a progressive decline in arterial pressure ensues, which results in death some time after reinfusion. Although this definition denotes the failure of blood alone to prevent death, it does not deny the possibility that other rational and effective life-saving procedures may be found.

Two basic bleeding techniques have generally been employed in attempts at the standardization of a suitable irreversible hemorrhagic shock procedure, i.e., a procedure which does not result in animals dying of acute cardiorespiratory failure (CRF) or surviving indefinitely with or without the replacement of the withdrawn blood. One of these techniques utilizes the withdrawal of a fixed proportion of blood, based on body weight or

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the predetermined blood volume, regardless of the hypotensive level attained. This technique has generally failed to produce a reliable shock method, because of the marked variability in the dog's ability to compensate for blood loss and the variations in the ratio of blood volume to body weight. The second technique has met with considerably greater success and involves the withdrawal of blood until the mean arterial pressure has been reduced to some arbitrary level, maintaining this level for some critical time by withdrawals or infusions of blood as may be necessary, and then reinfusing all the shed blood. The bleeding volume required to reach and maintain the desired level of hypotension is obviously not fixed by the investigator, but by various factors residing in the individual animal.

Two methods representative of the latter technique which have had the greatest use are the Wiggers and Fine methods. For use in our laboratory the Fine method appeared to be the simplest and best of the two, since: only one level of hemorrhagic hypotension is employed; the desired hypotensive level is maintained by an elevated open glass reservoir (Lamson bottle) connected to an artery instead of manually by syringe; and general anesthesia, a complicating factor in shock studies, is not employed.

Furthermore, since the duration as well as the degree of hypotension is important in the establishment of a shock state irreversible to the replacement of the shed blood, it is important to have a suitable endpoint for reinfusing the shed blood. The Fine method appeared to provide an endpoint which we felt was most suitable, since it was heralded by some physiologic response on the part of the individual animal rather than being based on a fixed duration of exposure to hypotension. This endpoint occurs when heparinized dogs, after having been bled from a femoral artery to a mean arterial pressure of 30 mm.Hg by means of a Lamson bottle, have spontaneously taken back 40 per cent of the maximum bleeding volume (MBV). If the remaining 60 per cent of the MBV is reinfused at this time, irreversible hemorrhagic shock results in over 80 per cent of the animals and is recognized with certainty when the post-reinfusion mean arterial pressure of the dog has spontaneously declined to 60 mm.Hg.

Pilot studies in our laboratory with the Fine shock method indicated the following:

1. The elevated self-infusion reservoir technique, as employed by Fine and co-workers and as commonly employed by others, has no provision for continuously adjusting the changing levels of blood in the elevated reservoir that result from continuous and unpredictable interchange of blood between the animal and the reservoir. Consequently, a constant hydrostatic counterpressure of 30 mm. Hg is not maintained during bleed-out and auto-infusion, and the one major effect of hemorrhage

that is to be regulated, viz., the desired level of hypotension, is neither susceptible to accurate control in a given experiment nor acceptably reproducible from one experiment to the next. Moreover, analysis of the Fine method showed that the height of the column of blood which the animal's mean arterial pressure was to support actually always exceeded the desired 40.6 cm. (30 mm.Hg).

2. Although some animals succeeded in taking up 40 per cent of the MBV, others would suddenly go into CRF prior to that event which threatened the untimely termination of the experiment due to the death of the animal. This was not anticipated on the basis of the recent published reports of the method by Fine and co-workers.

3. When CRF supervened before 40 per cent uptake of the MBV, it was found that the apparatus as employed by Fine did not permit the prompt reinfusion of the shed blood at a rapid but controlled rate which would be necessary to effect resuscitation and to subsequently demonstrate whether irreversibility to transfusion had been induced. Moreover, the necessity of transferring the blood from one bottle to another in order to filter it through gauze was a delaying feature and appeared to involve undue handling of the blood with the possible damage of the erythrocytes.

A thorough consideration of previous methods and of our experimental aims led us to formulate our immediate objectives as follows: (1) develop a technique for reproducibly accomplishing both hemorrhage and a pre-selected level of hemorrhagic hypotension; (2) determine a suitable combination of exposure period and level of hemorrhage hypotension which would result in a consistently large percentage of animals dying after reinfusion of the shed blood, i.e., dying of irreversible hemorrhagic shock; and (3) establish the clinical picture of irreversible hemorrhagic shock as it develops under our conditions by making incidental observations and measurements during the experimental period that would minimally interfere with the former objectives.

To reproducibly accomplish bleeding and a pre-selected level of hemorrhagic hypotension, a new apparatus whose chief components are an automatic fluid level control and a unique blood reservoir arrangement has been devised, tested, and successfully employed in our laboratory. A full description of the apparatus and its mode of operation are presented in the dissertation. This apparatus, irrespective of the magnitude of the bleeding volume (which it graphically records), accurately and automatically maintains the top level of a column of fluid at a pre-set height above the intraarterial bleed-out site (the zero level is the abdominal aorta). Here, at the tip of the bleed-out cannula, the column of fluid exerts a hydrostatic pressure counter to the dog's mean arterial pressure which opposes hemorrhage and supports auto-infusion by the dog with equal force from the onset of hemorrhage to the time that the investigator chooses to reinfuse the remainder of shed blood. The dog does all the

rest. The apparatus succeeds in making possible a "uniform" pre-selected level of hemorrhagic hypotension as long as the animal is able to maintain it by spontaneous hemorrhage into and self-transfusion from the reservoir.

Several additional advantages of this system are: (1) a polyvinyl plastic bag, part of a closed system, serves as the reservoir for the collection and temporary storage of blood which minimizes bacterial contamination; (2) the heparin requirements are reduced because all the surfaces exposed to blood are non-wettable; (3) reinfusion can be promptly initiated and the blood filtered while it is reintused at a controlled rate; and (4) the temperature of the shed blood can be regulated if desired.

Equipped with our apparatus which would impose a fixed "hemodynamic burden" from the very onset of hemorrhage to the time that we reintused the shed blood and also afford a degree of objectivity and reproducibility in the mechanical aspects of hemorrhage that was heretofore unattainable by other bleeding techniques, we endeavored to determine a suitable combination of exposure period and level of oligemic hypotension, which when applied would lead to a circulatory state in a consistently large percentage of animals that was refractory to the reintusion of the shed blood.

In particular, the minimal effective period of exposure which we were seeking was not an average derived fixed period of exposure which we might arbitrarily and indiscriminately impose on all animals, but rather one which was set by each animal's circulatory state as reflected by the extent of auto-infusion from the reservoir which we could measure.

Towards these ends, our interest lay chiefly in the bleed-out and uptake behavior manifested by the animals subjected to various pre-selected levels of hypotension and the related time factors, in so far as these might mirror the relative tolerance of the animals subjected to hemorrhagic hypotension by means of our apparatus. With respect to the latter, we were hoping for greater uniformity of response than had been previously observed in similar studies in mongrel dogs.

Since we had found, when employing Fine's elevated reservoir technique, that dogs that did succeed in taking up 40 per cent of the MBV died of shock subsequent to transfusion, this endpoint seemed tentatively to be worthy of further study and, should it still prove untenable in our hands, would at least serve as a reasonable point of departure.

Sixty adult male, mongrel dogs having an average body weight of 18.9 kg. (11.5–30.0 kg.) were employed in these experiments which are divided into two series, each consisting of three groups of dogs. Groups I (2 dogs), II (9 dogs), and III (10 dogs) comprise one experimental series, while Groups IV (13 dogs), V (16 dogs), and VI (10 dogs) comprise the other.

Depending on the particular *group*, dogs were permitted to bleed out

against a hydrostatic counter-pressure (HCP) equivalent to either 25 mm. Hg (Group I), 30 mm. Hg (Groups II and IV), 35 mm. Hg (Groups III and V), or 40 mm. Hg (Group VI) employing the automatic blood pressure stabilizing device.

Depending on the particular *series*, dogs were permitted to bleed out and take up freely at the pre-selected hypostatic level and the shed blood remaining in the reservoir not reinfused until either one or the other of the following critical events (endpoints) occurred: (1) cardiorespiratory failure (CRF) regardless of the percentage of the maximum bleeding volume (MBV) spontaneously taken back by the dog to that time (Groups I, II, and III); and (2) 40 per cent uptake of the MBV or CRF if it occurred before 40 per cent uptake of the MBV was reached (Groups IV, V, and VI).

Twelve to 18 hours prior to experimentation, the dogs were allowed water only. Approximately two hours before hemorrhage, the dogs were given a sedative dose of morphine (2 mg. kg. B.W., i.m.) and were exercised about 30 minutes thereafter to assist bowel and bladder evacuation. The dogs were loosely tied on a table in supine position. Under local anesthesia, a femoral artery was cannulated for purposes of hemorrhage and arterial pressure measurement. Five to ten minutes prior to hemorrhage, the dogs were given 2 mg./kg. B.W. of heparin, i.v. Hemorrhage was instituted by unclamping a rubber shod hemostat situated on the bleed-out tube connecting the femoral arterial cannula to the plastic bag reservoir. When a dog arrived at the pre-selected endpoint for terminating the period of oligemic hypotension, as described, the shed blood remaining in the reservoir was returned in a timed interval of five minutes.

Continuous measurements of arterial pressure, respiratory rate, heart rate (ECG), and bleed-out and uptake volumes were made. Serial hematocrit and rectal temperatures were taken. Plasma (T-1824) and blood (T-1824 and hematocrit) volume determinations were made before hemorrhage and after reinfusion. Autopsies were performed for gross and histological examination.

These incidental measurements and observations, which would minimally interfere with our prime objective, were made to establish the clinical picture of irreversible hemorrhagic shock under our experimental conditions.

Only 28 (48 per cent) of the 58 dogs hemorrhaged against HCP's of either 30, 35, or 40 mm. Hg succeeded in taking up 40 per cent of the MBV, since CRF supervened in the remainder of the animals prior to that event. Therefore, 40 per cent uptake of the MBV is not a reliable endpoint for planning to terminate the induced period of oligemic hypotension by restoring the remainder of the shed blood.

However, 95 per cent of the animals that took up 40 per cent of the MBV, and benefited temporarily by the replacement of the remaining 60

per cent of the MBV, died of shock. Therefore, 40 per cent uptake of the MBV, though not a reliable endpoint, is a valid one when accomplished by the dog, since at the time of its occurrence it can be predicted with great confidence that the restoration of the remainder of the shed blood alone will be inadequate to prevent death.

Prompt intraarterial reinfusion made possible by our apparatus was adequate to resuscitate 88 per cent of the animals that reached CRF before taking up 40 per cent of the MBV. Sixty-one per cent of the latter animals died of shock, while the remainder of the animals survived indefinitely. The demonstration that a large percentage of the animals that are rescued by reinfusion at CRF subsequently die of shock has greatly increased the efficiency of the shock procedure. Consequently, CRF must presently serve as an alternate to the desired endpoint of 40 per cent uptake of the MBV, although it is not a desirable or invariably valid endpoint.

A reliable prognosis of a fatal outcome in the event that CRF supervenes prior to 40 per cent uptake can thus far only be made when the post-reinfusion MAP has spontaneously declined to 60 mm. Hg.

The analysis of the comparative performances of the animals permitted to hemorrhage against each of the HCP's employed suggests that under our experimental conditions and employing our automatic blood pressure stabilizing device, the conditions of hemorrhage most suitable for inducing a state of irreversible hemorrhagic shock in mongrel dogs are hemorrhage against and uptake from a pre-selected hydrostatic counter-pressure of 35 mm. Hg and an endpoint for terminating oligemic hypotension of 40 per cent uptake of the maximum bleeding volume or cardiorespiratory failure, whichever occurs first. Subjected to these conditions of hemorrhage, 85 per cent or more of the animals can be expected to die of irreversible hemorrhagic shock.

The automatic blood pressure stabilizing apparatus has enabled us to view the variability in the tolerance for hemorrhage exhibited by mongrel dogs with a degree of objectivity that was heretofore not possible by other bleeding techniques. The marked variability in the tolerance for hemorrhage observed in the mongrel dogs presently employed prompts the suggestion that future studies in irreversible hemorrhagic shock be attempted in pure bred dogs of uniform age, size, and nutritional background so that their performance under hemorrhagic hypotension might be compared to that of the former.

Although the present series of exploratory studies was not designed for ascertaining the functional significance of the alterations that have been observed, the positive and negative results derived from the tabular and statistical analyses of the observations and measurements obtained during hemorrhagic hypotension, after reinfusion, and at autopsy for the various experimental groups, the combined shocked dogs and combined "chance" survivors, warrant further evaluation in future shock studies.

STUDIES ON VISCERO-VISCERAL REFLEXES

by TALMAGE GORDON HIEBERT*

These studies were designed to investigate (1) the existence of intestino-cardiovascular and intestino-respiratory reflexes and (2) the influence of the central nervous system activity upon these reflexes. First, attempts were made to establish reproducible reflex changes in the heart rate, blood pressure, and respiratory rate and depth in response to chemical, mechanical, thermal, and electrical stimuli. Tests were then made of the effects of prolonged tetanic stimulation of a peripheral nerve upon the threshold and response of these reflexes. Finally, experiments were performed in order to test if alterations in the visceral reflexes resulting from the peripheral nerve stimulation were mediated by activity induced in the spinal cord, medulla oblongata, or supra-collicular centers.

Acute tests were performed on 45 barbiturate-anesthetized cats during which there was continuous recording of blood pressure, heart rate, and respiratory rate and depth. Laparotomies were performed to expose the jejunal portion of the intestine. The stimuli comprised stretch, pressure, electric current, heat (45° to 50° C.), adrenal extract (0.01 per cent and 0.1 per cent), methacholine (0.0002 per cent, 0.001 per cent, and 0.004 per cent); incidental tests were also made with potassium chloride and strychnine. The reproducible strengths of stimuli of the chemicals and electricity made these the agents of choice for quantitation of responses. The prolonged tetanic stimulation was always applied to the femoral nerve. The reflexes were tested both prior to and following the somatic nerve stimulation given to 50 per cent of the animals in each series; the other half of the animals served as controls for the peripheral-nerve-excited animals by remaining undisturbed for an equivalent time period, the reflexes also being tested in them both prior to and following the period of wait.

To test for the location of alteration induced by the peripheral nerve stimulation in the central nervous system, a series of experiments were performed on groups of cats which had been either cordotomized between the level of the fifth and sixth thoracic or second and third cervical vertebrae, decerebrated at the level of the midbrain, or functionally decorticated by relative hypoglycemia induced by insulin administration. Blood sugar levels were determined and the reflexes were compared at relatively comparable states of hypoglycemia.

The following conclusions and indications were derived:

1. The intestine in the barbiturate-anesthetized cat is sensitive in the

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sense that stimuli applied to it gives rise to reflexive changes in blood pressure and respiratory rate and depth. Heart rate changes were not associated with the transient vasomotor changes, nor was heart rate affected by the intestinal stimulation, indicating that under the conditions of the experiments the responses evoked were served by the sympathetic afferent outflow.

2. The adequate stimuli which could excite the receptor organs to elicit these reflexes included stretch, pressure, heat, and electric current applied to the outer surface of the intestine, and adrenal extract and methacholine when injected into the intestinal wall. Since the former stimuli can communicate their effects through the serosa, but the chemicals, which can not, had to be injected into the intestinal wall, it is concluded that the receptor organs innervated lie within the intestinal wall.

3. The intestino-vasomotor reflex was the most reliable index of intestinal sensitivity. The intestino-respiratory reflexes, while seemingly very sensitive, were not accurately reproducible nor always identifiable.

4. Quantitation of the vasomotor responses to a standardized strength of electric current and various concentrations of the chemical agents differed among animals but in general indicated that (1) the response could be increased with an increase in the strength of the stimulus, and (2) the difference in responses resulting from different strengths of stimuli changed in a near constant relationship over a period of time in an animal if it remained in good condition.

5. The degree of response had little relationship to the strength of stimulus among animals. Only the fact that a response could be evoked was predictable, and that the response to a stimulus (with the exception of adrenal extract) would be in a certain direction.

6. All stimuli, with the exception of adrenal extract, caused the blood pressure to rise; adrenal extract most often evoked an initial depressor response. The results do not permit any conclusions regarding this differential sensitivity based upon morphologically differentiated receptor organs.

7. After initially establishing the characteristics of the reflexes in an animal, a 90-minute period of tetanic stimulation of the femoral nerve generally caused the reflexive responses to be as great as or greater than those produced prior to the somatic nerve stimulation. In some cases the responses became unstable and bidirectional. This was in sharp contrast to the deterioration or absence of reflexive responses obtained from animals subjected to the same conditions but without the peripheral nerve stimulation.

8. Peripheral nerve stimulation applied after sectioning the spinal cord between the fifth and sixth thoracic or second and third cervical vertebrae did not produce apparent alterations in the internal reflexes as compared to those produced when the central nervous system (CNS) was intact,

suggesting that the influence of the somatic nerve activity was not induced within the spinal cord.

9. Peripheral nerve stimulation applied after decerebration at the level of the midbrain again did not produce apparent alterations in the internal reflexes comparable to those produced in the CNS-intact animals. This indicated that the effect of the peripheral nerve input was not upon the reflex connections in the bulbar area.

10. Hypoglycemia induced by insulin administration depressed the responsiveness of the viscero-visceral reflexes which were tested. The degree of depression of reflexive responses among animals was to some extent a function of the blood sugar level. There was no apparent alteration in the internal reflexes as a result of prolonged peripheral nerve stimulation in the hypoglycemic animals. Since hypoglycemia, to the extent produced in these animals, is known to gradually obviate cortical activity, these animals were considered to be relatively functionally decorticated and the depression of the internal reflexes is attributed to this. The fact that the peripheral nerve stimulation altered the reflexive responses when it was applied in CNS-intact, but not when applied in the cortically depressed animals, suggested that the intensive and prolonged somatic nerve activity effected its influence upon visceral reactions at the cortical level.

LEO S. ROWE—CITIZEN OF THE AMERICAS

by GUSTAV ADOLPH SALLAS*

Introduction

Students of history have been writing biographies ever since Suetonius wrote the *Lives of the Twelve Caesars* in the First Century of the Christian Era. Two millenia of human progress have failed to alter substantially the nature of their problems, for in the final analysis a man's life can be accurately interpreted only in terms of performance projected against a composite background of heredity and environment. Unfortunately, the necessary data are seldom available in sufficient detail to permit an exhaustive analysis of an individual personality. The result, therefore, must needs be a somewhat unbalanced picture heavily dependent upon the interpretation of the subject's contemporaries and unduly reflecting their biases and personal equations.

This problem is compounded in the present study by the lack of documentary evidence concerning the subject's formative years, and by his personal reticence.

Even in his chosen and dearly beloved field of endeavor, Rowe contrived to be so impersonal as to submerge himself under an organization and a cause. To millions in the Western Hemisphere Leo Rowe was the Pan American Union and the Pan American Union was Leo Rowe. To the analyst viewing the story objectively it is sometimes difficult to distinguish between the two, and no amount of focusing can succeed in drawing a clear image of one without showing vestiges of the other.

Under the circumstances, it must be clearly stated that this is a biography of Leo Rowe, not the history of Pan Americanism. If at times the picture of the man seems to fade away and that of the movement overshadows it, that is as Rowe would have wished it. At least, a decade of personal observation and the present research have led to that conclusion. Since only when seen in the perspective of time can a man assume his true stature, no attempt has been made to effect a thorough evaluation of the subject. Until the final verdict of history is rendered, we of this generation must confine ourselves to accurate expositions of facts with the minimum of interpretation required for clear presentation.

When on December 5, 1946, a slight, unimpressive man was killed by an automobile in front of the Bolivian Embassy in Washington, D. C., a demonstration of grief of considerable proportions was registered through-

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out the Western Hemisphere. Governments as well as private organizations and individuals from all walks of life hastened to publicly express their sorrow, and journalistic sentiment did not fail to keep pace. Within the next few days eulogistic editorials concerning the deceased had appeared in a string of major newspapers extending from New York to Buenos Aires. Many ventured to express the hope that some day his indefatigable efforts for forty-five years, on behalf of the cause of Pan Americanism, would be made a matter of historical record.

This hemisphere-wide mourning accompanying the death of Leo Rowe was altogether fitting and proper. If the Good Neighbor ideal was symbolized by any one man, he was that one, and there is general agreement that no other American, North or South, ever labored so long and so consistently on behalf of Pan Americanism.

The story of Leo Stanton Rowe begins in McGregor, Iowa, where he was born on September 17, 1871, the son of a German-Jewish immigrant of very modest means. He was brought to Philadelphia at the age of three, and there attended public schools and earned a city scholarship to the recently founded Wharton School of Finance and Economy of the University of Pennsylvania. At Wharton he was exposed to such masters of American pedagogy as Edmund James and Simon Patten, the political economists, and John Bach McMaster, the historian. Upon his graduation as a Bachelor of Philosophy in 1890, the University awarded him a fellowship to study in Europe.

The academic record of Leo Rowe shows him to have been a serious young man, whose relative standing among his classmates was high. Surviving members of his class, both in high school and college, describe him as studious, little given to levity, and endowed with a good deal of perspicacity.

As part of his requirements for the degree of Doctor of Philosophy, earned at the University of Halle, Germany, in October 1892, he wrote an interesting dissertation in German on the municipal finances of Berlin and Paris, under the direction of the famed German economist Johannes Conrad. Thereupon, he traveled through Austria, Italy, Switzerland, and France until the end of the summer of 1893, when he returned to Philadelphia. He was then promptly employed by the University of Pennsylvania as an instructor in Municipal Government at Wharton.

In addition to teaching, Rowe studied law and received the degree of Bachelor of Laws in 1896 from the University of Pennsylvania. He was only twenty-four years of age at that time, but he was already highly regarded in scholarly circles. He had been elected to the Council of the American Academy of Political and Social Science, was writing prolifically for various technical publications in the United States and Europe, and was considered one of the foremost authorities in the field of municipal

administration in this country. But not content with being a pioneer in one field, he was already drawn to another.

Shortly before the outbreak of the Spanish American War, he was assigned to give an additional course at Wharton; a course in International Law. Here he concentrated upon the juridical aspects of the major question of the day: the Cuban situation. It was while preparing these lectures that he was impressed by the fact that there was not, in this country, one single university course in Latin American politics. Rowe felt that such a deficiency should be corrected.

But before he could do anything in this connection, the first great opportunity of his life arrived. Upon the occupation of Puerto Rico by the United States forces, it was found that the island was governed by a tangled maze of Spanish laws accumulated over a period of centuries. The question soon arose as to what laws should be in effect on the island. To remedy this situation, an Act of Congress of 1900, known as the Foraker Act, provided for a Mixed Commission of United States citizens and native Puerto Ricans to revise and codify the laws of Puerto Rico.

Upon the recommendation of the Provost of the University of Pennsylvania, Rowe was appointed by President McKinley to the Puerto Rican Commission in June 1900, and he became its chairman the following year. Not only did he draft the basic code which served the island for many years, but he also discovered his own mission in life. This mission, as he conceived it, was to preach mutual understanding among the peoples and nations of the Americas.

When he returned to the mainland in February 1902, he was firmly convinced that since the United States was about to enter a new era in its relations with Latin America and many problems were bound to arise from this relationship, it was necessary to train young men to cope with such problems—to cope with them as businessmen, as government officials, and as diplomats. What was needed, in his opinion, was a campaign to impress upon the American people the importance of the Latin American nations to the United States in the new scheme of things. He felt that he should start this campaign by teaching a course on Latin America, and immediately began studying the subject and assembling material for such a course.

His first step was to inject more and more political and administrative questions incident to Cuba and Puerto Rico into his international law course. Then, as he had been elected President of the American Academy of Political and Social Science immediately upon his return from Puerto Rico, he turned that organization into a forum for the frequent discussion of Latin American questions.

In order to further his mastery of the subject of Latin America and its people, Rowe then started the custom of traveling to Mexico every summer to make a thorough, on-the-spot study of that country's political

institutions. He continued this practice until 1912. Meanwhile, he wrote on Latin America so consistently and successfully that he soon became widely known to the Latin Americans as their foremost champion in the United States. And his fame in this country spread rapidly too.

President Theodore Roosevelt and his Secretary of State, Elihu Root, were well acquainted with Rowe's work, and when they came to select the delegation to the Third International Conference of American States to be held in Rio de Janeiro in 1906, they placed his name on the list. Before he sailed for Brazil, Rowe obtained a leave of eighteen months from the University to pursue research in South America for the course on Latin America which he had been preparing for several years.

At the Rio Conference he was elected Chairman of a committee charged with the reorganization of the Pan American Union. This body had been established in Washington in 1890, as the permanent organization of the International Union of the American Republics, the association of American nations created by the First International American Conference, which assembled in the capital of the United States that year. Although Rowe's committee at the Rio Conference in 1906 did little to alter the basic organization of the Pan American Union, it did enlarge the scope of its activities. It also provided for the establishment of a permanent commission in the Foreign Office of each member country of the Union, to serve as a liaison unit between each government and the Union. Upon his return to the United States a year later, Rowe was appointed to the commission created by the Department of State pursuant to this resolution, the Pan American Committee of the United States. And while serving with this group he came to the realization that the Pan American Union was the ideal temple from which to propagate the doctrine of Pan American solidarity. Thereupon he made the Pan American Union his ultimate goal.

After the Rio assembly adjourned, Rowe spent over a year touring South America. He visited Southern Brazil, Argentina, Chile, Peru, and Panama, gathering material and giving lectures in various universities and cultural institutions as he went along. And everywhere he spoke he promised the Latin Americans that he would make a career of preaching to his countrymen understanding, mutual respect, and cooperation towards the nations of Latin America.

When he returned to Philadelphia he finally felt ready to teach a course in current Latin American politics. He called it "Constitutional Governments and Constitutional Guarantees in Latin America", and it was inaugurated in the fall of 1908. Here again he was a pioneer, as this was the first political science course entirely devoted to contemporary Latin America ever given in an institution of higher learning in the United States.

In addition, he continued to fight for inter-American good will with

all the weapons at his command. Manuscripts for books and magazine articles began to flow out of his office with great regularity. He soon became a national figure in the United States, so that it was not surprising to see, within one month picked at random in 1908, editorials and articles about him in such newspapers as the Woonsocket, Rhode Island, *Republican;* the Hot Springs, Arkansas, *News;* and the Atlanta, Georgia, *Constitution.* And as his standing grew, the United States Government began to utilize his services more and more. He was appointed to the United States-Panama Joint Claims Commission in 1913, was sent on official missions to Argentina in 1914, and to Chile in 1915, and served as Secretary of the United States Section of the American-Mexican Joint Commission in 1916.

Then the United States entered the First World War, and the resulting economic dislocation in Latin America nearly throttled the economies of some of our southern neighbors. President Wilson and his Secretary of the Treasury, William Gibbs McAdoo, worked out a plan to help the Latin American governments meet the emergency. Wilson summoned Rowe to Washington, appointed him Assistant Secretary of the Treasury, and placed him in charge of that program. As could be expected, his prestige in the other American Republics continued to grow. After the war, his transfer to the Department of State in 1919 as Chief of the Division of Latin American Affairs, met with a favorable reception throughout the hemisphere.

At this juncture the Director General of the Pan American Union, John Barrett, resigned his post. In Latin America, as well as in Washington, it was considered a foregone conclusion that Rowe was in line for the post. But there was still one more hurdle. The Director General of the Pan American Union is chosen by the Governing Board of that organization, at that time composed of the Secretary of State of the United States and the diplomatic representatives of all the Latin American Republics in Washington. Traditionally, the Board voted for the candidate favored by the Secretary of State, but a new incumbent, Bainbridge Colby, had assumed that office only recently, and his attitude towards Rowe was unknown.

The element of suspense was eliminated when the election was finally held on May 5, 1920. Rowe was elected unanimously on the first ballot. It was in his speech upon taking office on September 1 of that year that he neatly summed up his *raison d'etre.* Stating that it was the one ambition of his life to contribute, even in some small measure, toward the closer union between the Republics of America, he assured his audience that if he was able to make such a contribution to that cause, he would consider that he had not lived in vain. Judging by the extravagant praise heaped upon him by his fellow man, the conclusion is inescapable that he did not live in vain.

Although he had been laboring assiduously on behalf of the cause for twenty years, he had no intention of slowing down the tempo of his activities simply because he had achieved his ambition. On the contrary, no sooner had he taken over the Pan American Union than he redoubled his efforts, and for the next twenty-six years maintained a feverish pace day and night keeping the affairs of the Union on an even keel, preaching Pan Americanism in a continuous round of speeches and printed articles, and attending all the International Conferences of American States and many technical Pan American conferences, in one capacity or another. Moreover, he stood always ready to mediate, to assuage ruffled feelings, and to reconcile divergent points of view—all in the interest of peace in the Americas. And his idea of relaxing in his spare time or on a vacation was to conduct courses on Latin America, which he did for many years at the Georgetown University as well as at the Williamstown Institute of Politics. Still, he found time to visit every Latin American country as an unofficial ambassador of good will, visits which all observers agree had an immeasurable effect in bringing about the rapprochement essential to Pan American solidarity. That the Latin Americans appreciated his efforts is evidenced by the number of honors and decorations they bestowed upon him.

Leo Rowe was never the leading actor in the drama of Pan Americanism, and seldom held the center of the stage, but he was always either in the wings helping to stage the production or in the prompter's pit ready to offer aid whenever needed. And the record shows that his contribution was of sizable proportions. Shortly after his taking office, the Union of the American Republics entered into what is undoubtedly the most difficult period of its existence. In the entirely different arrangement of the world's political chessboard, resulting from the First World War, a wave of anti-United States feeling spread through Latin America, which was to last until the advent of the Good Neighbor Policy. In the face of this development the important thing was to maintain the Union intact and, as Rowe saw it, free from political aspects which could easily bring about its collapse. In sum, a cultural Pan Americanism had to be kept alive until such a time as the American Republics were ready to assume the full responsibility of membership in a political union.

A great deal had to be accomplished first. The Latin Americans had to realize that the actions the United States took in the Caribbean were motivated purely by the law of self-preservation; that no other major power on the face of the earth could or would have taken a different course; and that in reality the United States had no permanent design on their territory. The United States, on the other hand, had to learn to use moderation in its display of power before its weaker neighbors, to acquire an understanding of what seemed the very peculiar customs and institutions of the Latin Americans, and, above all, to effect a gradual

transformation of the Monroe Doctrine from a unilateral instrument of United States foreign policy into a hemisphere-wide declaration of principle. The responsibility for the defense of the American Continent had to be taken out of the hands of one American country exclusively and made the responsibility of all.

And that is precisely what Rowe had the satisfaction of helping to accomplish, beginning at the Seventh International Conference of American States in Montevideo in 1933, when war was declared on suspicion and mistrust in the American family compact, and ending with the Act of Chapultepec in 1945, by which Pan American solidarity was written indelibly on the pages of history.

ON THE METABOLISM OF CYSTEAMINE

by RICHARD ANTHONY SALVADOR*

For a number of reasons, much interest has recently been focused on the metabolism of cysteamine. As the terminal and active portion of the coenzyme A molecule, cysteamine is not only a normal body constituent but occupies a unique position in intermediary metabolism (Baddiley and Thain, 1951; Novelli, Schmitz and Kaplan, 1954). This revelation has led to much speculation regarding its origin and mechanism of incorporation into coenzyme A. With the exception of several organisms, cysteamine does not appear to be an essential dietary constituent. In general, little is known regarding the interrelationships of cysteine-cysteamine metabolism. It is believed that in mammals, cysteamine and cystamine are formed entirely from cysteine and cystine. The mechanism for this conversion, however, is still largely unknown (Eldjarn and Pihl, 1956). Hypotaurine (2-aminoethanesulfinic acid) has been shown to be an intermediate in the formation of sulfate and taurine by cysteamine and cysteine (Awapara, 1953; Eldjarn, 1954a). Cystamine has been suggested as a possible intermediate in the metabolism of cysteine but no such function has been demonstrated (Robbers, 1934). Cysteamine is also thought to play a dual role in the formation of bile acids. It is a precursor of taurine and as a constituent of coenzyme A it is believed to function in the activation of the various cholic acids. This activation is thought to result in the formation of a cholic acid-coenzyme A complex which is able to react enzymatically with taurine and glycine to form the respective bile acids (Eldjarn and Pihl, 1956). In addition to its role as a normal body constituent, cysteamine has been found effective in protecting animals from an injurious dose of X-ray when injected just prior to exposure (Bacq *et al.*, 1951; Rugh and Wang, 1953). Efforts have been directed towards elucidating the mechanism of this protection. Such information would provide a better understanding of the transformations occurring in tissue exposed to an injurious dose of X-ray. It would also allow the development of more effective X-ray protective procedures as well as methods for the selective enhancement of tissue sensitivity. Cysteamine has had some clinical trial in the therapy of radiation sickness and has been reported effective and without any serious limitations (Bacq *et al.*, 1953; Bacq, 1954).

During the course of these investigations, some aspects of the metabolism of cysteamine were investigated *in vivo* and *in vitro*. To facilitate these studies, S^{35}-cysteamine was synthesized. *In vivo* studies were carried out on male and female C_3H mice and on man. The pattern of

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excretion of radioactivity after administration of S^{35}-cysteamine was determined, after which separation of urinary metabolites was accomplished on Dowex 50 resin columns. Identification procedures were carried out on the isolated metabolites. The results obtained in normal mice were compared with those seen in animals pretreated with cysteamine prior to being subjected to a lethal dose of X-ray. The results obtained in normal subjects were compared to those observed in subjects subjected to hypoxic conditions for seven hours after ingesting S^{35}-cysteamine. *In vitro* studies were carried out using extracts of pigeon liver acetone powder and *Clostridium kluyveri*. Both sources were found to contain systems capable of catalyzing the oxidation of cysteamine. An attempt was made to purify and characterize these systems and identify the product or products formed.

In male and female C_3H mice, essentially 100 per cent of the administered radioactivity appeared in the urine in the first eight hours. Approximately 72 per cent appeared following exposure to a lethal dose of X-ray (900r). Excretion of radioactivity in X-irradiated males was significantly higher than that seen in females in the next sixteen hours. No other significant differences in excretion of radioactivity between the sexes was observed. In general, the excretion of radioactivity in mice receiving X-ray was significantly slower than in the non-irradiated group.

The first eight-hour urine from irradiated and non-irradiated mice was resolved into six distinct peaks by resin chromatography. Four of the metabolites were identified. Some evidence indicates that the unidentified compounds are hypotaurine (2-aminoethanesulfinic acid) and cystamine disulfoxide. Hypotaurine has recently been shown to appear in the blood and urine of rats following administration of cysteamine (Eldjarn and Pihl, 1956). Cystamine disulfoxide has been isolated from rat urine only (Cavallini *et al.*, 1956). The major portion of the administered radioactivity in the urine of non-irradiated mice was in the form of unchanged cysteamine (40 per cent). Considerable activity was found in the form of taurine (21 per cent) and inorganic sulfate (13 per cent). Approximately 5 per cent appeared as cystamine. Only inorganic sulfate appeared in the nine- to twenty-four-hour urine.

Following exposure to X-irradiation, the urinary excretion of inorganic sulfate and taurine increased in the female during the first eight hours while the percentage of unchanged cysteamine was reduced. In the male, only the concentration of the metabolite believed to be hypotaurine differed significantly after X-irradiation. Excretion of this substance was reduced by approximately one-half. Little can be deduced from these quantitative changes regarding the activity of cysteamine in the X-irradiated animal. Qualitatively, the route of degradation appears unchanged and suggests that whatever type of reaction cysteamine enters into in exerting its protective effect, it either escapes unchanged to be degraded

eventually through the usual path or, in the process of exerting its protective effect, it is converted to an intermediate which may follow this path.

Urinary excretion of radioactivity in male subjects after ingestion of S^{35}-cysteamine was found to differ significantly under normal and hypoxic conditions. Under normal conditions, approximately 44 per cent of the administered radioactivity was recovered in the first eight hours, 56 per cent in the first twenty-four hours, and 70 per cent after thirty days. Under hypoxic conditions, approximately 27 per cent was recovered in the first eight hours, 38 per cent in the first twenty-four hours and 40 per cent after thirty days. Reports on kidney function under conditions similar to those of this experiment indicate that there is no reduction in renal activity. It is known, however, that diminished oxygen tension can cause a shift of metabolic paths as well as other discrete but important changes (Patt, 1953). Therefore, qualitative and quantitative differences in urinary metabolites found under normal and hypoxic conditions would not be unexpected. Separation and identification of urinary metabolites from the first eight-hour collection indicated that the major portion of radioactivity was excreted as taurine (35 per cent) and inorganic sulfate (33 per cent). Approximately 10 per cent was excreted unchanged and 19 per cent was unidentified. Under hypoxic conditions, there was a two-fold increase in the amount of inorganic sulfate excreted. Taurine and several other metabolites seen under normal conditions did not appear suggesting some alteration in the metabolic path.

In vitro studies were carried out on an extract of pigeon liver acetone powder and *Clostridium kluyveri*. Both were found to contain material which would catalyze the oxidation of cysteamine. In pigeon liver, this activity was demonstrated to increase with pH and substrate concentration. A partially purified extract was tested for its ability to catalyze the oxidation of cysteamine, cystamine, 2-mercaptoethanol, cysteine, and glutathione. It was active only with cysteamine as the substrate. Diphosphopyridine nucleotide, which markedly stimulated the oxidation of cysteamine by a partially purified extract of pigeon liver, had no effect when added to a purer preparation. In contrast to pigeon liver, cell-free extracts of *Clostridium kluyveri* catalyzed the oxidation of thioglycolate and 2-mercaptoethanol as well as cysteamine. However, little if any of the reactivity towards thioglycolate or 2-mercaptoethanol was affected by heating or treating with ethylenediaminetetraacetic acid (EDTA) although there was a definite reduction in the reactivity with cysteamine. The latter effect was also seen in pigeon liver. Attempts were made to separate and identify this non-protein catalyst from pigeon liver. Dialysis yielded such a substance and its activity could be eliminated with EDTA. Efforts were made to reproduce this stimulation with a number of trace metals without success.

Using S^{35}-cysteamine, some attempts were made to separate and identify the product or products formed by pigeon liver by means of Dowex 50 ion exchange resin and paper chromatography. Only cysteamine and cystamine could be detected. Cystamine was formed in the non-protein as well as the protein catalyzed reaction. It was not determined if this compound was formed as a result of protein activity.

SUMMARIES OF DISSERTATIONS SUBMITTED FOR THE DEGREE OF DOCTOR OF EDUCATION

THE UNITED STATES OFFICE OF EDUCATION: ITS ADMINISTRATIVE STATUS IN THE FEDERAL HIERARCHY

by JAMES CARL MESSERSMITH*

The Problem

This dissertation is concerned with (1) an examination of the development of the administrative status of the United States Office of Education and (2) an attempt to determine what its status in the federal hierarchy should be.

Since the establishment of the Office of Education in 1867, two concurrent developments have had a significant bearing on all questions concerning its reorganization. In the first place, there has been a gradual increase in the scope of Office activities and programs to include practically all areas of education. Secondly, educational programs directly related to all levels of education have developed in many separate divisions or departments of the Federal Government.

The conviction that education is a matter of national concern was reflected in the creation of a *Federal* Office of Education. Through succeeding generations, the re-affirmation of this conviction by both statesmen and educators has aided in motivating the Office to discover and carry out its proper role as the federal education agency.

Through the examination and analysis of the various organizational stages through which the Office has passed and of recent thought and opinion as to what the administrative status of the Office should be, this study will, it is hoped, prove of assistance to those concerned with present and future problems regarding the reorganization and relocation of the Office.

Procedures

An analysis of the problem resulted in the identification of six subproblem areas for investigation as follows: (1) federal administrative organization; (2) position of the United States Office of Education in the federal hierarchy; (3) functions and activities of the United States Office of Education; (4) internal reorganizations of the United States Office of Education; (5) significant forces in the internal reorganizations of the United States Office of Education; and (6) recent points of view regarding the administrative status of the United States Office of Education.

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Data upon which the study was based were obtained from a variety of sources. Among the more primary sources were: ***Annual Reports*** of the Commissioners of Education; *Annual Statements* of the Commissioners of Education; pertinent issues of the *Congressional Record;* hearings before the House Committee on Education and Labor, Eighty-third Congress (Title: *Federal Activity in the Field of Education*); and handbooks, yearbooks, convention proceedings, reports, and other official documents of various national organizations participating in the study.

Other significant sources of data included the reports and appraisals of numerous authoritative groups interested in the problem. Among the more noteworthy of these reports were: the 1923 report of the Institute of Governmental Research (Title: *The Bureau of Education*); the report of the Hoover Commission Task Force on Public Welfare; the report of the Hoover Commission on Social Security and Education; the 1950 report of the Public Administration Service (Title: *An Administrative Survey of the U. S. Office of Education*); and the 1952 Quattlebaum report (Title: *Federal Educational Activities and Educational Issues before Congress*).

As one phase of the study, interviews were held with the representatives of a number of national organizations for the purpose of securing current views concerning the status of the Office. In the selection of organizations to participate in the survey, the following factors were considered: population represented by the organization; accessibility of the organization; status of the organization; and type of data desired. In order to secure a more representative sampling, seven different types of organizations were interviewed. These organizations represented education, labor, industry, agriculture, religious groups, women's groups, and professional groups.

The interview schedule prepared for use in connection with the interviews had as its primary objective the securing of pertinent data; in addition, it served to prevent undue digression and assisted in moving the interview forward to a conclusion.

Findings

The principal findings of the study are set forth below.

1. At times there has been a lack of clear knowledge and understanding as to what constitutes the true functions of the Office of Education. While its statutory functions are spelled out in the establishing Act, interpretations of these functions have varied. This fact, coupled with an uncertainity as to the means suitable to the performance of its functions, has in some instances served to impair the administrative efficiency and procedure of Office personnel.

2. Despite the fact that the functions and purposes of the Office have

been re-examined from time to time, not only by the various commissioners of education, but also by national advisory committees on education and by committees from educational and other organizations, *no notable additions to the original functions and purposes of the Office have been set forth.*

3. The feeling has, at times, existed that the historical functions of the Office in the areas of research and collection and dissemination of educational data have been overshadowed by programs of a promotional or administrative nature. In 1929, for example, the Commissioner of Education was able to have the Office relieved of several direct administrative functions, such as the operation of schools in Alaska, which he felt were obscuring the essential function of the Office.

4. The dispersion of federal educational activities among many federal departments and agencies has had a deleterious effect upon the development of an adequate administratve framework within the Office of Education. The failure of the Federal Government to adopt an overall policy in education has resulted in piecemeal legislation and uncoordinated educational programs. This fact was particularly stressed in the report of the Hoover Commission Task Force on Public Welfare.

5. The practice of the Office of attempting to satisfy the interests and desires of various clientele groups has had a tendency to create an internal administrative problem resulting in a fluctuating Office structure and making difficult a well-rounded Office program. The 1950 report of the Public Administration Service pointed out that the organization and staffing pattern of the Office reflected its attempt to yield, in some degree, to each of the clientele groups desiring services.

6. The expansion of Office functions has not been guided by any consistent pattern of reorganization. The character, scope, and significance of Office reorganizations have been primarily determined by the views of the various commissioners toward meeting the needs of the times, and by certain forces which have, through their effect upon the functions and programs of the Office, necessitated modification of its administrative structure. Among these forces are: the growth and expansion of public education; war and international tension; economic depression; clientele groups; and congressional actions.

7. The principal gain to the Office of Education in its newest position in the federal hierarchy appears to be the prestige value afforded by a cabinet-level department. Apparently the Office has not as yet commanded any markedly increased degree of public respect and admiration for its services and programs.

8. Recent thought regarding the administrative status of the Office of Education appears to favor: (1) establishment of the Office as an independent agency under a National Board of Education, and (2) coordination, within the Office, of all federal activities of an educational

nature. These views are supported and encouraged primarily by educational organizations and interests.

9. Of all current problems in the area of federal educational relations, that of federal aid to education appears to be predominant in the national thinking and interest as brought out by the survey of national organizations.

Recommendations

On the basis of this study, the following recommendations appear to be justified.

1. A comprehensive study should be made as the basis for a determination and adoption of an over-all policy by the Federal Government in regard to its educational functions, activities, and programs. This study should include judicial opinions and findings as to the consonance of the determined policy with constitutional provisions and limitations.

2. A codification of existing laws in the area of federal educational relations should be made (1) to aid the study called for above, and (2) to serve as the basis for future legislation deemed necessary to implement the over-all federal policy in education determined and adopted as a result of the recommended study.

3. The proper administrative status of the Office of Education should be clearly and specifically determined in the light of the over-all federal educational policy formulated and adopted as a result of the recommended study. This should include a determination of the appropriate functions and services of the Office.

4. Greater concern than has sometimes prevailed should be shown personnel of the Office when administrative changes are effected, that morale within the agency may be more positive in character.

5. Contemplated internal changes in the Office should result only from a careful objective study involving a cooperative appraisal by the staff. At times, too frequent shifting or alteration of the administrative structure of the Office has been confusing, time-consuming, and not conducive to efficiency.

6. The Office of Education should be made the coordinating agency for all federal programs of an educational nature. The federal educational agency, which has other extensive contacts with state educational agencies, is more likely than noneducational agencies to take account of established relationships and policies in education. Efficiency will be improved if the number of federal contacts which state and local educational agencies must maintain are kept at a minimum.

7. The Office of Education should be established as an independent agency under a National Board of Education. This recommendation

is in consonance with the official views of leading national organizations which have taken a stand on the issue.

At the same time, it is recognized that there is some desire for a federal department of education. A number of national organizations which formerly held this view have since changed in support of an independent Office of Education under a National Board.

Likewise, there are those who favor a Federal Office of Education as now constituted—a component of a multifunctional federal department. With respect to improving the status of the Office, this appears to be a step in the right direction. However, as far as appropriations and personnel are concerned, the Office remains an insignificant part of the department in which it is located. Moreover, the Commisioner must still speak for education through an intermediate agency. For these and other reasons, the above recommendations seem to be warranted.

Concluding Statement

Despite the wide scope of its services and the complexity of matters with which it deals, the Office of Education has seldom found at its command the resources equal to its mission as conceived by its staff or by the educational clientele which it serves. From its inception, it has been torn by conflict between an overwhelming realization of the importance of education to the Nation and the fear of impinging upon traditions of state and local control of education.

Those interested in the Office must speak out if proper consideration is to be given to their feelings and desires. Educators must raise a more unified voice if they expect adequate attention to be given to the question of over-all federal policy in education and the subsequent establishment of an improved administrative status for the Office.

GUIDANCE FUNCTIONS OF ELEMENTARY SCHOOL TEACHERS

by ERNEST WALTER SNODGRASS*

Although general agreement was found in the professional literature as to the important role of the elementary school classroom teacher in providing guidance services to her pupils, little seemed to be known about the guidance competencies of elementary teachers or their attitudes toward guidance duties. Few phases of guidance have been the subject of less research and study.

The Problem

The major purposes of this study were to determine the extent to which elementary teachers recognized the presence of guidance duties and problems in their teaching assignments and the degree of adequacy they felt toward executing or resolving them. More particularly the purposes were: (1) to investigate the preparation and experience qualifications of elementary teachers for guidance work; (2) to determine the relationships of these qualifications to the frequency of recognition of guidance duties and to the degree of feelings of adequacy in dealing with them; and (3) to inquire into the nature of help these teachers desired from the school systems toward increasing their competencies for guidance work and the relationships between their choices of help desired and elements of their professional qualifications.

Procedures

The research procedures consisted of the following:

1. A review of literature pertaining to guidance at the elementary level.

2. The compilation, on the basis of the literature, of lists of guidance functions, duties, and problems; specialized personnel to whom teachers might refer more difficult problems; educational and experience qualifications of elementary teachers; and suggested methods of increasing teacher competencies in guidance work.

3. The preparation of a questionnaire designed to obtain information about the teaching situation, training and experience qualifications for guidance work, personnel to whom pupils with problems might be referred, the frequency of recognition of guidance duties and the degree of adequacy felt toward each, and the nature of help desired from the county school system toward increasing competencies in guidance work.

4. The tabulation and statistical analysis of the data to determine relationships between qualifications and (1) the incidence of recognition

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of guidance duties, (2) the degree of feelings of adequacy toward performing these, and (3) the nature of help desired toward improving competency in guidance work.

The study was limited to classroom teachers in the public elementary schools of the twenty-three county school systems in Maryland. Teaching principals were included in the sample. Non-teaching principals were excluded.

Questionnaires were sent to 400 teachers in white schools and 68 teachers in Negro schools, representing 10 per cent of the teachers in schools of each size. Schools included in the study ranged from the one-teacher variety to those with several teachers in each grade. Returns were received from 323 white and 39 Negro teachers. These responses represented approximately 81 per cent and 57 per cent of the respective samples. The major portion of the study was based on the returns from the larger sample.

Findings

Teachers in schools having one or more teachers per grade made up 87.3 per cent of the sample. Approximately one-fifth taught combinations of two or more grades. Very few were kindergarten teachers or those who taught in grades above sixth. Most of them taught in schools serving grades one through six.

The services of specialized personnel were available to nearly all teachers for making referrals. The services of a nurse were available to more than 90 per cent and those of a visiting teacher to nearly 60 per cent. The services of guidance counselors, psychologists, and other educational specialists were available with less frequency.

Less than half of the teachers held the certificate now required for entering service as a fully qualified elementary teacher and more than one-fifth held emergency certificates. Few had taught other than in the elementary schools and more than half had ten or more years of teaching experience at that level. Slightly less than two-thirds held a Bachelor's degree, and only 7.3 per cent held the Master's degree.

Ninety-eight per cent had taken one or more of the courses suggested as desirable training for guidance workers, one-fourth had taken a course in principles of guidance, and nearly one-fifth had studied occupational and educational information. Approximately three-fourths had participated in a child study program and 5.9 per cent had served as study group leaders.

Guidance Duties and Problems

There were 131 items, each requiring two responses, in the part of the questionnaire dealing with guidance duties and problems. For purposes of brevity in this report the sum of the frequencies of the

"often" and "sometimes" responses is used to indicate frequency of recognition. The sum of the frequencies of the "adequate" and "fairly adequate" responses is used to indicate frequency of feelings of adequacy. Frequencies are expressed as percentages of the number of teachers in the sample.

For 95 of the 131 items the frequencies of recognition exceeded 75 per cent. Frequencies for twenty-one additional items exceeded 50 per cent. Another thirteen were above 25 per cent; only two items were below that percentage.

Frequencies of responses indicating feelings of adequacy were above 75 per cent for ninety-four items; above 50 per cent for another twenty-six; and above 25 per cent for the remaining eleven.

The two items for which frequencies of recognition were below 25 per cent were in the area of articulation. Frequencies of recognition were below 50 per cent for two more of the five items in this area. Frequencies of adequacy were below 50 per cent for these four items.

Items for which frequencies of both recognition and adequacy were below 50 per cent were: selecting psychological tests to be used; administering individual intelligence tests; administering group tests other than those of intelligence, achievement, and readiness; using the less structured and more projective techniques in individual analysis; and planning pupil or parent handbooks for orientation purposes.

Data obtained through individual analysis were used by more teachers for purposes of grouping and pupil placement than for detecting the beginnings of maladjustments, preparing for counseling with pupils or parents, or preparing for home visits. Frequencies of adequacy were higher for the purposes for which these data were most used.

Frequencies of recognition were below 50 per cent and those of adequacy were below 75 per cent for schoolwide health services. These services included provisions for health examinations for all pupils, and for necessary immunization or isolation for disease control.

Frequencies of feelings of adequacy were reported by less than 75 per cent of the respondents for such clinical services as identification of pupils with mental handicaps, the analysis of causes contributing to home problems of pupils, and making adequate provisions for remediation, especially in connection with poor speech, hearing impairment, and low mental capacity.

In the realm of counseling services less than 75 per cent recognized or felt adequate toward problems pertaining to planning individual educational programs and to physical handicaps. Less than three-quarters felt adequate in counseling mentally retarded pupils and pupils manifesting moods of being very unhappy or depressed.

Frequencies of recognition were as high for the problems of pupils who were shy or seclusive, lacked social contacts, and felt insecure as

for those of pupils who were overly aggressive, stubborn, or negativistic. More teachers felt inadequate concerning the resolution of problems which originated in the home, problems of mental handicap, and those of emotional maladjustment than felt inadequate toward other personal-social problems.

Frequencies of recognition and feelings of adequacy were remarkably high for items pertaining to techniques to be used in teaching occupational information, including those to be used for developing wholesome attitudes toward all occupations. Only club activities and school assembly programs were used by less than three-quarters of the teachers for teaching pupils about the world of work.

The three services for helping teachers increase their competencies in guidance work which received the highest percentages of teachers' first choices were: (1) make each teacher conscious of the guidance point of view and of her responsibilities for helping pupils make adjustments and for preventing maladjustments, with 25 per cent; (2) college credit courses in guidance, with 21 per cent; and (3) provide a trained guidance worker to coordinate the work in each large school, with 17 per cent. Of the services as stated by the respondents, in spaces provided for that purpose, the three most frequently written were: reduction in the number of pupils per classroom, reduction in the amount of clerical work assigned to teachers, and discontinuance of the practice of placing slow learners in the usual classroom groups.

Training and Experience Related to Other Factors

Of the suggested training and experience qualifications for guidance workers, the number of college courses in guidance taken by teachers was more directly related to the frequency of recognition and feelings of adequacy than was any other training or experience qualification. The number of years of teaching experience ranked second in this respect.

Neither the type of degree nor certification tended to increase consistently either the index of recognition or the index of feelings of adequacy. There was no area of services in which a statistically significant difference in either recognition or adequacy favored those holding the Master's degree.

With the exception of the number of guidance courses which teachers had taken and the number of years of teaching experience, the suggested training and experience qualifications for guidance workers did not affect the choices of services desired from the county school systems to aid teachers in increasing competencies in guidance. Those having none to two courses in guidance gave the highest number of first choices to college credit courses in guidance. Teachers who were in the first and second years of teaching gave a higher percentage of first choices

than did the total sample to induction programs for new teachers which would acquaint them with pupil personnel and guidance duties.

Findings for Negro Teachers

More than half of the teachers in this group taught in schools having less than one teacher per grade. A similar proportion taught classroom groups which combined two or more grades. Slightly more than 70 per cent taught in schools having grades one through six.

All of this group of teachers had taken at least one course suggested as desirable training for guidance workers. More than half had taken a course in principles of guidance and an equal number a course in mental hygiene. All had participated in a child study program.

The certificate now required for beginning teachers for permanent status was held by 54 per cent of the sample. Twenty per cent held the Master's degree and another 66.7 per cent the Bachelor's degree. More than four-fifths had been teaching for more than two years and 46 per cent for ten or more years.

Guidance duties and problems were recognized as a part of the work of their teaching assignments by about the same percentage of these teachers as for the larger group. There were no marked differences in the percentages of responses indicating feelings of adequacy toward performing these duties or resolving these problems. Most teachers felt competent in providing guidance services.

The first choices of services desired from the county school system differed from those of the larger sample only in that joint study groups for teachers and social workers ranked third with this group. Providing a trained guidance worker to coordinate the work in each large school ranked fourth.

Conclusions

The following conclusions were drawn from the data reported in the study. Only the more important ones may be briefly stated in this report. These are:

1. The number of specialized guidance and educational personnel to whom elementary teachers may make referrals was inadequate both as to the availability of present specialists and as to the number of specializations represented by these workers.

2. These elementary teachers had made a good beginning toward preparation for providing guidance services to their pupils. Though less than one-half met present standards of teacher training, at least one-quarter had had one or more courses in guidance.

3. Elementary teachers recognized guidance duties, functions, and problems as a part of the work of their teaching assignments. A remarkably high percentage felt at least fairly adequate to provide guidance services which met the needs of their pupils.

4. Elementary teachers felt least adequate in helping children whose

problems arose from the home, the community, mental or physical handicaps, and emotional maladjustments.

5. Teachers recognized the problems of pupils who were shy, secluSive, or withdrawing to at least as high a degree as those of pupils whose behavior created disciplinary difficulties in the classroom.

6. College credit courses in guidance and elementary teaching experience tended to increase teacher recognition of and feelings of adequacy toward guidance duties and problems.

7. College credit courses in guidance and induction programs which included instruction in guidance and personnel duties were the most desired types of inservice training to help teachers increase their competencies in guidance work.

Recommendations

There is need for the State Department of Education and the several county boards of education to:

1. Examine the availability of specialized educational personnel to whom elementary teachers may make referrals with a view toward more adequate provision of specialists and specializations to meet present needs.

2. Consider the advisability of including college credit courses in guidance, training in pupil personnel functions for beginning teachers, and joint study groups for teachers and social workers in programs of inservice training.

3. Examine present trends in the organization of programs of guidance services for elementary school pupils for the purpose of developing organizational patterns best suited to the needs of the school system and the local school unit.

4. Subject the job of the elementary classroom teacher to further analysis with regard to pupil-teacher ratio, evaluation of present duty assignments in terms of teacher capabilities and pupil needs, and the degree to which teacher abilities are being utilized in helping pupils develop their potentials.

5. Examine present practices in grouping pupils for classroom instruction to determine the degree to which the needs of both typical and atypical pupils are being met, and to discover the effects of the presence of slow learners and non-readers in regular classroom groups on the learning opportunities of typical and gifted pupils.

6. Find means of increasing teacher competencies in working with pupils' homes and with community groups and agencies.

Although encouraging beginnings have been made, it is clear that provisions for guidance on the elementary school level in Maryland are inadequate. This study has pointed to some notable deficiencies which should be given prompt attention. It is hoped that this study has generated sufficient interest to see that this attention is given.

A CAREER-LINE STUDY OF THE PROFESSORSHIP IN TEACHER EDUCATION INSTITUTIONS

by DANA BUSH ROBLEE *

The Problem

This is a career-line study of the developmental history of college faculty members who first engaged in professional teacher education in the period of the academic years 1950–1951 through 1954–1955. It was designed to discover (1) the patterns of education, work experience, and evolving ideal occupational concepts which resulted in persons embarking on teacher-education careers, and (2) the drives which were most influential in their decisions to undertake the responsibilities of work in professional teacher education.

Procedures

Faculty members, qualified to be subjects in the investigation, were identified by administrative officers of teacher-education institutions. Data were collected directly from the subjects through use of a comprehensive questionnaire. These were analyzed in terms of: (1) educational preparation for the professional practice of teacher education; (2) the work experience prior to, and in the first professional teacher-education position; (3) the sequence of ideal occupational concepts at career points through the formal education phases of preparation for the professional specialization, and (4) the pattern of incentives which were influential in the subjects' decisions to embark on teacher-education careers.

Review of the Literature

A thorough search of the literature revealed only one study that employed the scientific compilation of vocational histories of faculty members in teacher-education institutions. This, and a substantial quantity of investigations which, although not career-line studies, had a bearing on the problem, were reviewed. These studies provided valuable insights regarding the status of teacher-education faculty members in general but none of them focused on the group members who formed the subject population of this study.

Findings

For purposes of this summary a composite of the characteristics found to exist most frequently in the subject population of this study is expressed as a description of a hypothetical typical professor who began a professional teacher-education career within the last five years.

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A Typical Professor

The typical college faculty member is a man (there are more than twice as many men as women) between 31 and 40 years of age. He graduated from a medium-sized or small public high school (only one in 20 graduated from a private high school). At that time, he considered teaching to be a desirable occupation for himself but felt that a career in some other profession was more desirable. However, by the time he entered college, his ideas of occupations had matured somewhat, and although he still considered other professions, he then believed that teaching was a more attractive occupation.

In undergraduate college, he considered taking a liberal arts program with added professional courses but actually pursued a professional secondary school program (less than one quarter of the respondents pursued undergraduate professional, elementary school programs). He graduated, prior to 1945, from a large, coeducational, predominately white-student university under state control. At that time, he believed that teaching was the most desirable profession for him, but he gave little thought to the possibility of college teaching (only 6 per cent of the group believed that college teaching was the ideal occupation at this career point).

The typical professor completed the requirements for a Master of Arts degree, subsequent to 1945, at a large, state-controlled, predominately white-student, coeducational institution which offered programs of study leading to the Doctor's degree. At this university, he specialized in an area of professional education and took some additional subject-matter and professional courses. A career in education seemed most desirable at the time of receiving the Master's degree; teaching of any type was his first choice, but he did not consider the level of higher education to be particularly desirable.

After receiving his first graduate degree, he considered completing the requirements for the doctorate and actually made progress toward it (over two-fifths of the subjects held the Doctor's degree). However, the typical professor who has occupied his position in a teacher-education institution for less than five years does not hold a Doctor's degree.

Before engaging in professional teacher education, the typical professor had work experience which gave him considerable insight into the problems of his present students. He had considered employment in a non-educational, professional occupation but did not accept it. Also, he had considered employment at the elementary school level and actually had been engaged in secondary school education.

When he decided to embark on a teacher-education career, he was most strongly moved by the belief that this professional specialization offered an opportunity to utilize his best aptitudes, although he was also

influenced by the fact that teacher education offers work opportunities favorable to mental and physical health.

In his first full-time teacher-education position, his salary was about $4,300 for the academic year. This was an increase over the salary associated with his immediately-preceding position. He considered some collateral employment but, since the income from it would supplement his educational salary by less than 25 per cent, he did not undertake it.

The first assignment which he received in professional teacher education was the teaching of credit courses in methodology. His students generally were being prepared to teach typical, elementary school pupils in programs of general education.

At the time he began his teacher-education career, he was a member of two national, professional-education organizations, including the National Education Association. Since engaging in the teacher-education work he has retained his professional affiliations and added others in areas of his special interests.

IMPLICATIONS AND SUGGESTIONS

Implications of the findings are significant to all aspects of teacher education; however, these suggestions are confined to implications for three areas: guidance, curriculum development, and selection and recruitment.

Guidance

The findings point up a serious need for all secondary schools to reappraise their curricula, as well as their guidance programs, in order that graduates may be prepared to make occupational choices that will be satisfying and enduring.

This serious deficiency in preparation to make occupational choices extends on through the programs of higher education. The emerging pattern of ideal occupational concepts indicates an almost complete change of occupational aspirations from the general high-status and economically-profitable occupations to those of teaching.

The principal motivational factor in choosing careers was a desire for personal satisfaction in doing what they believed they could do best.

The preparation of prospective professors of teacher education should include an understanding of teaching problems on more than one school level.

Educational planning for a professional teacher-education career should include the earning of a Doctor's degree. The findings further imply that the respondents consider that college teaching requires qualities other than those most productive in teaching in the lower schools.

Curriculum Development

Responsibility for inadequacies in educational programs must be shared by those in charge of curriculum development. Here, the findings have many applications.

The study shows that the teacher-education curricula must meet the needs of a cosmopolitan student population. The findings suggest that undergraduate institutions, other than large, coeducational, state-controlled universities, do not provide curricular offerings that lead to the professorship in teacher-education institutions. Too, the findings raise the question of why the graduate curricula of institutions, other than large, coeducational, universities under state or private control, offering doctoral programs to predominantly white student bodies, do not prepare a greater share of the college teacher-education faculty members.

If rich, realistic, and functional curricular offerings had been provided, it is likely that the distribution of specialization areas in professional education and in additional preparation would have been more closely related to work in professional teacher education.

Selection and Recruitment

The problems of selection and recruitment which are brought into focus by this study relate, in the long view, to inadequacies in programs of guidance and curriculum revision.

If the secondary school programs could be enriched to facilitate more mature appraisals of occupations, curricular offerings which would be adapted to the preparation of college teachers could be developed even in the undergraduate college. The products of such curricula would do much toward assuring an adequate supply of prospects for college teaching responsibilities. Candidates, who possess the native perspicacity, intelligence, and qualities of scholarship necessary for effective college faculty membership, would find a program of college teacher preparation challenging and exhilarating, while unqualified students would be enabled to discover that higher education teaching was not a realistic and practical occupational aspiration for themselves.

Through such programs and the provision of ample graduate student-teacher situations, the selection and recruitment of college faculty members might become natural and adequate.

FURTHER RESEARCH

The unexplored areas opened by this study, if investigated, might throw significant light on the total program of teacher education and provide more understanding of the interrelated factors of guidance, curriculum, and selection and recruitment of faculty members.

Suggestions for additional needed research follow:

1. A follow-up career-line study of the subject population in this study should be initiated at about the close of the sixth decade.
2. Ages, in the total population engaged in professional teacher education should be studied (this study was confined to faculty members who first engaged in the professional specialization in the period 1950–1951 through 1954–1955, inclusive).
3. The personnel policies of teacher-education institutions should be investigated.
4. A comparative study should be made of incentives which, in secondary and lower level schools, lead to teaching careers.
5. Information concerning parental occupations and socio-economic backgrounds of contemporary teacher-education professors would be valuable.
6. A causitive investigation should be made of why graduates of private high schools rarely enter professional teacher education.
7. An investigation of memberships, and the reasons for them, in professional organizations and honor societies would provide valuable insights.
8. A study of the emphasis placed on professional research by teacher-education institutions would be useful.

CONCLUDING STATEMENT

It is hoped that this study has thrown some significant light upon the important problems of staffing teacher-education institutions. Although in recent years, progress has been made in improving the caliber of institutional personnel engaged in the preparation of teachers, most persons would agree that further improvement is desirable.

In calling attention to the lack of interest on the part of college faculty members in teacher-education careers at the time they graduated from high school; to the unrealistic nature of their education for the important work they are performing; and to other needs relating to the preparation of college teachers of education, it is hoped that this study will make a contribution.